THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

JUNE, 1893.

A CONTRIBUTION TO THE STUDY OF DISEASES OF THE NERVOUS SYSTEM.

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THE least complete division of veterinary pathology, compared with human pathology, is certainly that dealing with the diseases of the nervous system. It is no doubt true that our general nosological knowledge will never attain to the same degree of perfection as that to which the physicians of mankind can reach, seeing that the many means of investigation they have at their disposal, without reckoning the subjective symptoms, cannot be made available by the veterinary surgeon. But, notwithstanding this circumstance, there is no occasion for despondency, as we are convinced that veterinary surgeons will gradually be able to fill up the gaps and to elucidate the problems regarding which erroneous opinions still prevail, and particularly with respect to the etiology and pathogenesis of certain maladies.

In addition to the experimental method, to which we owe such brilliant results, there is another course to pursue in order to gain this end; this consists in the publication of well-observed clinical cases which others competent for the task can collect, arrange and condense, so as to form a complete record.

How many questions yet remain to be answered in the domain of veterinary neuro-pathology? Without referring to the more complicated disturbances, such as puerperal apoplexy, epilepsy, catalepsy, etc., we may limit ourselves to citing, for example, such an apparently simple and well-known affection as *serous meningitis* or *acute meningo-encephalitis* of the horse, which every practitioner has occasion to

observe more or less frequently. But the causes invoked to explain this affection are far from being satisfactory in every case.

There are certainly circumstances in which a search for the cause is very easy, and, among others, when it is of a *traumatic* character. In this direction we have observed cases of pachymeningitis resulting from the blow of a hammer or from a fall on the head; in other instances the animal has knocked itself against the top of the doorway when coming too hurriedly out of the stable. The same may also be said with regard to the purulent metatastic encephalites which are sometimes seen in the strangles of young horses, as well as in the *secondary* meningitis resulting from an affection of the ear, of the petrous temporal, or of those that appear as a complication of certain infectious maladies, such as the distemper of the dog, etc. In such circumstances the search for the etiological factor does not offer much difficulty.

But apart from the above-mentioned cases, it must be acknowledged that in the majority of instances of lepto-meningitis in the horse, the morbific agent remains an enigma for us. It is true that the high temperature of very warm weather has been blamed, as well as *inhabiting hot and badly ventilated stables*, no less than feeding inordinately on leguminous food rich in protein.

Without completely rejecting the possibility of the evolution of inflammation of the nerve centres by *insolation*, we are of opinion that even in sporadic cases we must rather admit the action of causes of an infective nature than that of heat or the defective ventilation of stables.

In those cases in which *plethora*, resulting from an abundance of nutriment, is blamed, might we not rather ascribe the disease to the influence of a specific agent?

If the temperature of the stable and abundant nourishment might be reckoned among the causes, why is it that cerebral affections of an inflammatory character are not witnessed more frequently among cattle and pigs, two species which are too often subjected to these conditions?

Another subject, not less sufficiently elucidated, is the pathogenesis of *idiopathic hydrocephalia* (immobility) of the horse, which is gradually developed, and without having been preceded by an acute affection (meningitis).

We propose to study, in a somewhat lengthy manner, the generally less-known disturbances of the nervous system, and among them the cerebro-spinal meningitis of the horse.

Cerebro-Spinal Meningitis. Spasm of the Neck.

Leptomeningitis Purulenta Cerebro-spinalis.

In the human species the malady known by the above names is characterised by a leptomeningitis of a purulent nature, especially involving the spine, though it may extend to the whole of the spinal cord and to the envelopes of the brain. It appears in an epidemic and a sporadic form.

In certain epidemics the affection is sometimes limited to a barrack or a few houses, and in others it invades wide territories. Sporadic cases are not rare in man, and the disease is then often of a secondary nature—that is, it has been preceded by a purulent inflammation of neighbouring organs, sometimes by simple eczema of the face, furoncles, nasal catarrh, an affection of the ear, etc. At other times it appears as a complication of an infectious malady, a pneumonia, peritonitis, variola, or typhus.

Leyden was the first to discover micrococci of an ovoid shape (*diplococci* and *streptococci*) in a case of *spontaneous* cerebro-spinal meningitis. Eberth and Klebs have also found micrococci in exudate from the membranes and ventricles of the brain, and in their cases the meningitis was secondary and accompanied by fibrinous pneumonia.

The bulbar and cephalic symptoms at first predominate, those which might be ascribed to disturbance of the cervical and lumbar portions of the spinal cord being only witnessed at a later period. The malady progresses from above to below, and then manifests a *descending* character, and the derangements remarked during life are at first due to great congestion, particularly of the pia mater, and subsequently to the pressure exercised on the nerve-centres by the large amount of purulent exudate lodged between the meninges.

Can the existence of a similar affection be admitted in the case of the domestic animals? We believe we may reply in the affirmative—at least, so far as the horse is concerned. In veterinary literature a certain number of cases of cerebro-spinal meningitis—some of them sporadic, others epizootic—have been described as observed in the different domesticated animals, though we cannot accept the doctrine of identity in every case designated as such with the disease in man. Certain authorities, and among them Dieckerhoff, of Berlin,* go so far as even to deny this in a categoric manner. We cannot identify the epizooty described by Apostolides (Egypt), and

* *Handbuch der Spec. Pathologie und Therapie.*

which others have qualified by the name of typhus or horse-plague, with the epidemic form of meningitis in man; and that which has been described by the Saxon veterinarians, Hartenstein, Dinter and Ackermann, partly resembles a form of influenza.

The symptoms of spinal meningitis observed in the cow by Vogel, Utz and others are not in accord with those of the human disease, and we will hereafter refer again to the latter, and also allude to a spinal meningitis of which the Danish veterinary surgeons have made mention.

In some of the sporadic cases reported, the symptoms and anatomical lesions enumerated present a perfect analogy to those observed in the disease in mankind. The purulent exudate is not absolutely *de rigueur*, seeing that it is at times also absent in man in those cases which run their course very rapidly. Among others we may refer to the two cases of cerebro-spinal meningitis observed in horses by Degive.*

In the following case the symptoms and lesions were in all respects identical with those witnessed in man.

A mare, eight years old, which had been standing for some time in the School hospital, became all at once seriously ill. On February 22nd, 1892, the symptoms were: loss of appetite, mastication and deglutition difficult, the mucous membranes of the head greatly injected and yellow-tinted, and a certain degree of somnolescence. The temperature had risen to 40° Cent., and the pulsations were sixty per minute.

On the next day, the 23rd, the animal exhibited well-marked hyperæsthesia of the anterior parts of the body; in the region of the atlas more particularly there was exaggerated sensibility betrayed on the slightest pressure. Our attention was attracted to this condition by noticing a certain degree of opisthotonos.

The spasm of the muscles of the neck became excessively intense on the slightest touch on this region or on raising the head—to such a degree indeed had it reached, that the animal might have been said to carry its head backwards. The tonic spasms extended to the other muscles of the shoulders and front limbs; the latter were extended rigidly forward whenever the animal received the least excitement, and when compelled to move in its stall it almost tumbled because of the rigidity of the legs and shoulders. The muscles of the face at times were convulsively contracted. On this day the temperature rose to 40·9° Cent., and the pulse, the volume of which had become reduced, remained the same in number as

* *Annales de Méd. Vétérinaire*, 1873 and 1874.

on the previous day. These symptoms evidently indicated that there was primarily a *bulbar* affection, and that this was followed by encephalic disturbance extending to the cervical portion of the cord—that it was indeed a case of *cerebro-spinal meningitis.*

On the 24th, the animal fell and was unable to rise without assistance. It was then put into slings. The spasms diminished, while symptoms of paralysis gradually became predominant. The abdomen had to a considerable extent lost its normal volume, and the flanks were exceedingly retracted. Defecation was rare, and the urine had a dark-brown colour, though it contained no red blood corpuscles. A difference in the pupils was observed this day, the left eye pupil being much more dilated than that of the right eye. The left facial nerve was also affected to such a degree that the upper lip and the end of the nose were drawn to the right side. The temperature vacillated between 39° and 41°, Cent., and the pulse was from 52 to 60 beats per minute.

On the following day there was a slight discharge from the nostrils, but more particularly from the left one. Otherwise the condition of the animal was the same as on the preceding day.

On February 26th there was slight amelioration in the symptoms. The animal, which had been allowed to lie down during the night, was able to get up unassisted; the appetite, too, was better, though the difficulty in mastication and deglutition persisted. The urine was paler in tint, and the icterus had become more marked; the pulse had reached 72 beats and the temperature was now 40·2°.

On March 2nd, the horse was completely paralysed, the hind quarters being more especially involved, and to such an extent that it could no longer stand, but lay continually. In this position its state became considerably aggravated. The urine contained a large quantity of red corpuscles and albumin; it escaped involuntarily. The fæcal matters also accumulated in the paralysed rectum. The pulse was almost imperceptible and exceeded 100 beats per minute.

The horse died on March 4th, having been ill about twelve days. During that time no disturbance in the thoracic organs had been noted, and the respirations had not exceeded fifteen per minute except in the last few days, when the animal continually maintained a decubital position.

Lesions.—At the autopsy the central nervous system at first attracted our attention. The characteristic lesions of a purulent cerebro-spinal meningitis were remarked. A greyish-yellow,

fibrino-purulent exudate, having somewhat the consistency of butter, was found beneath the dura mater and in the sub-arachnoideal spaces of the brain. The pia mater, as well as the external layer of the encephalon, was infiltrated. The lateral ventricles contained an exudate of the same character, and their walls were lined with a layer of coagulated exudate of a croupous nature. The perivascular lymph spaces also contained a purulent effusion.

The spinal cord, more especially in its cervical portion, was as if invaginated by a layer of consistent exudate, lodged between the dura mater and the pia mater, and nearly a centimetre in thickness. (See Figure).*

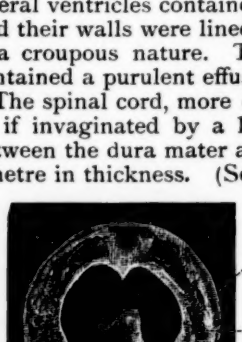

Fig. 1.
SECTION FROM THE CERVICAL PORTION OF THE SPINAL CORD.

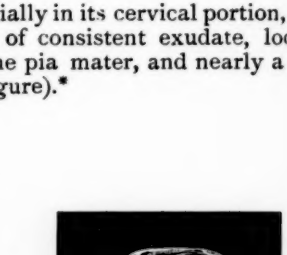

Fig. 2.
SECTION FROM THE DORSAL PORTION OF THE SPINAL CORD.

1. Dura Mater. 2. Exudate lodged between the dura mater and pia mater. 3. Exudate situated between the nerve roots.

The inflammatory products were situated between the nerve-roots, as is shown in Figure 2. The exudate in the lumbar region was more liquid than that in the cervical part, and in some places it showed traces of blood extravasation. The vessels of the pia mater were greatly congested, and the dura mater had hæmorrhagic patches. In addition to a purulent infiltration of its superficial layers, there were inflammatory products in the central canal of the spinal cord.

Beyond several ecchymotic patches on the serous and on certain mucous membranes—among others, that of the bladder—as well as fatty degeneration of the liver, which we considered altogether of a secondary nature, no other lesion worthy of mention was met with.

* The reproduction of these two medullary sections, with the exudate, were cleverly prepared by Prof. Hamburger, who also obligingly photographed them in their natural size. He did this by placing the section on very sensitive paper, as is done with cliches. The lighter tints of the photograph represent the darker portions of the section, the transparent portions of which appear dark.

Etiology.—From the very commencement of the illness we were inclined to believe that it was due to a specific cause, and it was in this direction that we pushed our investigations. So early as February 28th, one gramme of blood drawn directly from the jugular vein of this animal by means of a Pravaz syringe, and mixed with the same quantity of a solution of sodium chloride, was injected into the jugular of another horse. But notwithstanding the closest observation for several days, no indication of the slightest disturbance was perceptible in this animal.

An examination by means of the microscope of the exudate found beneath the dura mater of the lumbar portion of the spinal cord, revealed the presence of masses of streptococci and diplococci, which we were able to cultivate on agar and in serum. In the laboratory of the Veterinary School, Professor Hamburger also succeeded in isolating and cultivating cocci of an ovoid form, which rapidly developed on agar.

On March 12th, at 9 a.m., a culture, mixed with a solution of sodium chloride, was injected into the jugular vein of a horse. In about an hour afterwards the animal commenced to give evidence of a somewhat intense reaction, the indications of which were as follows:—

The pulse became frequent, and in three hours had attained to 120 to 130 beats per minute; the temperature rose 2°. The animal refused all food, and was very restless, and soon a profuse diarrhœa, with frequent micturition, set in. Towards the evening the horse became calm, the pulse was less frequent, and the appetite returned. Next day all the functions had regained their normal condition, and the organism had evidently got rid of the germs which had been carried through the circulation, and without their having produced serious disturbance in any organ.

At this time we had the good fortune, thanks to Professor Spronck, to obtain cultures of a pneumococcus found in the meningeal exudate of a woman and a child who had died of cerebro-spinal meningitis, accompanied by fibrinous pneumonia. These cultures, when injected into the saphena vein of a dog, only produced a slight amount of prostration, with loss of appetite for some hours, and elevation of temperature by 1°. We have no doubt that inoculation of these cultures beneath the dura mater of our experimental animals would have set up a purulent meningitis, as well as pleurisy and peritonitis, if the microbes had been introduced into the serous cavities.

Some rabbits which were inoculated in the dura mater

with cultures of the pneumococcus contracted a purulent meningitis.

In conclusion, we admit that the germs which gave rise to an idiopathic meningitis in the horse had nothing specific in them—that is, they did not attack the central nervous system preferentially or exclusively. Such micrococci can cause inflammation of the meninges, to which they are carried in circumstances we cannot determine, from some centre or from without, by way of the blood or lymph streams; and they may also attack other organs and give rise to a special inflammation.

The results of numerous bacteriological investigations have also proved that micro-organisms of different kinds may produce there, as in the other organs, identical lesions, such as a purulent inflammation. For instance, in the purulent exudate of the meninges have been found *pneumococci* (Leyden, Frankel, Fox, Bordoni-Uffreduzzi, etc.), the *staphlyococcus* and *streptococcus pyogenes* (Banti, Krause, Frankel), very fine *bacilli* along with micrococci (Netter), and, finally, micrococci of undetermined species found by Weichselbaum and others, as well as by Bonome in an epidemic in the evirons of Padua.

This is generally the case in all infectious diseases having an inflammatory tendency.

(To be continued.)

OCCURRENCE OF STRONGYLUS ARMATUS.

BY J. T. DUNCAN, M.D., PROFESSOR AT THE ONTARIO VETERINARY COLLEGE, TORONTO.

IT is now many years since Bollinger worked out the connection between verminous aneurism and colic in the horse. These aneurisms, due to the presence of *strongylus armatus* in certain bloodvessels, were not, up to Bollinger's time, supposed to be a cause of intestinal derangements. The authority mentioned, however, proved the case so clearly that his views have been accepted by many writers and teachers in Europe. On this Continent the question is still *sub judice*, as attention has only been given to it of late years. W. L. Williams, V.S., then of Bloomington, Illinois, gave a valuable record of cases occurring in his practice, and which appeared in the VETERINARY JOURNAL at the time. His cases were largely confirmatory of Bollinger's views, and show that these parasites, even in this country, must be considered as an important cause of colic.

To horse-owners the subject is one of great importance, and the first step in the inquiry would be to ascertain, if possible, what proportion of horses are infested.

At the outset, it may be admitted that American horses are much freer from parasites than are those of Europe. Speaking of Europe, that magnificent work recently brought out by Dr. Fleming,* says, "Except in young foals, it is rare to find a horse without aneurismal dilatations"; and Bollinger estimates the number infected as 90 to 94 per cent.

Two years ago, while preparing to write my own small work on the subject,† I investigated this question as closely as possible, the result being given in the following words: "This matter can only be determined by a great number of independent observations carried on in different parts of the Continent," the number affected "may be tentatively given as about one-third that of Europe." In other words, 30 per cent. of horses in North America suffer from aneurisms caused by *strongylus armatus*.

May this be accepted now as an average for this Continent? To aid in answering this question, I have to place on record the results of investigations carried on at the Ontario Veterinary College during the past session, '92-'93. The records only cover one-half of the dissecting season.‡ During that time, 96 horses were used for dissection purposes, and of these 96 subjects, 24 were found presenting parasitic aneurisms, some showing one, although in others there were two or three on the different branches of the anterior mesenteric artery. In regard to age, out of the whole number of horses examined (96) only one was a six-year-old; the others were all older, most of them being aged—the older horses (*vide* Bollinger) being more liable to this form of aneurism. The figures given above, then—24 out of 96—gives exactly 25 per cent. Other records at hand give a slightly higher percentage. Putting all together, however, it may be stated that, of the aged horses in this region at the present time, 25 to 27 per cent. are the subjects of parasitic aneurism.

* "Parasites and Parasitic Diseases of the Domesticated Animals." By L. G. Neumann. Translated and Edited by G. Fleming, C.B., LL.D. (London, 1892.)

† "Internal Parasites of the Horse." (Toronto, 1891.)

‡ I have to thank Mr. Sisson, V.S., Demonstrator of Anatomy, for the care with which these records were kept.

ON THE TREATMENT OF INFLUENZA IN THE HORSE.

BY E. WALLIS HOARE, F.R.C.V.S., CORK.

(*Continued from page* 317.)

IN the last article, we referred to the therapeutical value of quinine in the treatment of influenza cases, which were characterized by persistent high temperature. Having used this drug extensively, I can speak with confidence of its great value. It should be administered at first in a large dose, say two drachms, and repeated at intervals in smaller doses.

Its effect in reducing temperature, when other means have failed, and also its tonic action on the system, makes it an agent of great importance in cases where its use is indicated.

Having met with a fair number of cases in which death resulted, with pulmonary gangrene as a complication, I gave to a large number, which did not seem to be progressing as favourably as might be expected, doses of Ol. Eucalyptus, and to others doses of Creolin, in order to avert, if possible, the fatal complication above-named. I also had administered frequent inhalations of the same agents when the discharge from the nostrils assumed an unhealthy looking character.

The use of what may be termed "internal antiseptics," has in my hands proved very successful, and if, under ordinary treatment, the lung complications do not appear to tend to a favourable termination, I always prescribe either Ol. Eucalyptus or Creolin internally. It may be asked, how do these agents act in preventing the occurrence of pulmonary gangrene? I maintain that the chief cause of this fatal complication is the absorption of septic inflammatory products. The majority of fatal cases which have come under my notice have been due to pulmonary gangrene, which, although characteristic enough during life, I have, in nearly all instances, verified by *post-mortem* examinations.

The occurrence of such a complication cannot be ascribed to the intensity of the inflammatory process, because, as a rule, we do not find it in cases characterised by severe symptoms; but rather in those the course of which is slow and tedious, and the patients showing debility as a prominent symptom. In many cases we find the *post-mortem* appearances leading us to the conclusion that the lungs had suffered from a previous attack of inflammation, evidenced by the presence of organised products in the lung substance. The symptoms which are diagnostic of the commencement of pulmonary

gangrene are easily recognised. The case has usually passed the acute stage, but recovery is retarded, and we usually notice a relapse in the condition of the patient, the breath becoming very fœtid, the pulse feeble, the appearance of the animal dejected and eyes sunken, while auscultation reveals secondary crepitations of a bubbling character; there is often, also, a nasal discharge of black-coloured material, with an unbearable odour.

Another symptom which may be likewise noticed in such cases is relaxation of the sphincter ani, so that the anus remains constantly open.

It is clear that once pulmonary gangrene has set in, treatment can be of no avail; and we are forced to this conclusion on viewing the enormous amount of destruction of lung substance seen at the *post-mortem* examination.

We can assume, however, that by the internal use of antiseptics we can at least render the inflammatory products less harmful to the system.

We may now consider the subject of counter-irritation, as applied in the treatment of influenza with thoracic complications.

On this subject we find great difference of opinion existing; some practitioners asserting that counter-irritation is of the greatest benefit; others, that the employment of this measure is not only useless, but harmful to the patient. But such statements, founded on a hard and fast rule, cannot be accepted as absolutely correct, as we find there are cases benefited by the use of counter-irritants, and others where these agents can be dispensed with. Clinical experience teaches that there are many cases in which the adoption of the milder measures—such as hot fomentations, hot rugs, &c.—fail to give relief to the patient, while the application of mustard, &c., often has a marvellous effect. It is the indiscriminate use of such agents which proves both harmful and useless; each case has to be judged on its merits, and treated accordingly. Just as in some cases nothing is required, save the allowance of saline febrifuges in the drinking water, careful nursing, and pure air, &c., and in others it is essential that the administration of medicinal agents, stimulants, &c., be persevered in.

And so it is with the question of counter-irritation, although it may be difficult in all cases to give a definite rationale of its therapeutic effect.

We are all aware of the theory of counter-irritation; many arguments might be adduced to prove that this theory is

erroneous with reference to the action of counter-irritants in the treatment of affections of the chest; still, we cannot shut our eyes to the fact that when other means fail, great benefit results in many cases from their use.

The question to decide is—In what cases are counter-irritants indicated?

It is obvious that to apply them in all cases is wrong, both in theory and practice, as we are well aware that cases, if taken in time, the animals stopped from work and allowed pure air, and saline febrifuges given in the drinking water, will rapidly recover in many instances.

But if such cases are worked until debility supervenes, the appetite becoming lost, the first symptoms perhaps being the occurrence of rigors, tending to rapid engorgement of the lungs with blood, respiration greatly accelerated, extremities cold, &c., then the timely application of mustard to the sides is productive of benefit, especially when combined with the administration of diffusible stimulants, and diaphoretics. We have also to take into consideration that there are many cases in which, from carelessness of attendants and want of the necessary conveniences, it will be found impossible to have the hot applications adopted in a proper manner, and that under such circumstances this treatment may do more harm than good.

We have then, when necessary, to fall back on counter-irritation Of course it cannot be asserted that the application of active blisters will be indicated in all cases, as we have experience enough to clearly demonstrate that such treatment is injurious to the patient. It is of common occurrence to see patients with the major portion of the skin peeling off the sides of the chest, from the action of too severe remedies, and still to have the pulmonary lesions as unfavourable as could be—respirations oppressed and difficult, and every symptom of a fatal termination. We learn from studying the clinical phenomena that there are stages in the course of pulmonary affections, when a moderate amount of counter-irritation will be of the greatest benefit. Some cases require it at the outset; others at a later period, and the practitioner who employs it at the right time, carefully noting its effects, will have far better results than from following the hard and fast rules laid down by those authorities, who, on the one hand advise the application of counter-irritants in every case, and on the other hand those authorities who state emphatically that their use is not only devoid of therapeutical value but harmful to the patients.

THE EFFECTUAL USE OF LARD AS AN AID TO THE ACTUAL CAUTERY IN PREVENTING AND ARRESTING HÆMORRHAGE IN CASTRATION AND OTHER OPERATIONS.

BY HENRY GRAY, M.R.C.V.S., LONDON.

As the castration season has commenced, and as there seems to be such a great difference of opinion respecting the best way the actual cautery should be used in cases of castration, I thought I would bring before the notice of the readers of the Journal who use the actual cautery, the safest and easiest method, according to my experience, of preventing or arresting hæmorrhage.

The spermatic cord having been severed by means of an iron of a dull red heat, this iron is rapidly dipped once or twice in cold water, so as to render it not too hot to char the tissues; the lard is applied to the stump of the cord, and then the iron is rapidly drawn or pressed for a few times to one side of the stump, then to the other, and finally on to the top of it. The clam is then loosened and again shut, and if no oozing is seen on the stump the instrument is removed.

For the use of lard in this operation, it can be claimed:—

(1.) That it does not allow the iron, if it be too hot, to char and render brittle the tissues;

(2) That it does not allow the iron, if it be cold enough, to adhere to the tissues;

(3.) That it more effectually closes the vessels without causing "a scab," which would act as a foreign body.

Anybody who has castrated big lambs, and even adult rams, must have found how difficult it is in some cases where they are castrated by the actual cautery, to arrest the hæmorrhage; but by means of lard applied to the stump this is prevented. This application is even known to some itinerant castrators. Experience has taught me that an iron of a sticky heat is preferable to a red-hot one. A red-hot iron applied to lard causes smoke, which prevents the operator seeing what he is doing. White, in the 15th edition of vol. i. of his "Compendium of the Veterinary Art," 1829, page 314, says: "The general fault of operators is searing too much, whereby, instead of stopping or preventing bleeding, they produce it, so that the horse bleeds considerably after the operation. If the cord is cut off with the hot firing-iron, and not touched with the iron afterwards, it seldom bleeds at all."

I think the fault of modern surgeons is discarding too much of the old, and going in for too much of the new practice. A new broom sweeps clean, but an old one scratches away the dirt.

APOMORPHINE IN VETERINARY PRACTICE.

BY VETERINARY-CAPTAIN NUNN, D.S.O., F.R.C.V.S., PRINCIPAL LAHORE VETERINARY COLLEGE.

THE value of this drug as an emetic in canine practice appears to have escaped the notice of the veterinary profession; hence my venturing the following few remarks on its uses.

Hydrochlorate of apomorphine is obtained from morphine by treating it in closed tubes with hydrochloric acid. An atom of water removed from morphine leaves apomorphine, and hydrochlorate of apomorphine is formed by the combination of the alkaloid with the hydrochloric acid. (Hypodermic Medication, Bartholow, page 513.)

Apomorphine is in small, shining crystals of a greyish-white colour, turning green on exposure to light and air. It is odourless, and is soluble in fifty parts of water; it becomes of a green colour when boiled. (British Pharmacopœia, 1885).

Injectio Apomorphinæ Hypodermica.

Hydrochlorate of Apomorphine	2 grs.
Camphor Water	100 ms.

Filter through blotting paper.

Two minims of dilute hydrochloric acid added to the above keeps it stable and colourless. (The Extra Pharmacopœia, by Martin and Westcott, page 59.)

The above formula is that which has been employed in the Lahore Veterinary College, in doses of 4 to 8 minims hypodermically, as an emetic for dogs; but in practice it has been found that the camphor water is superfluous, as distilled or boiled and filtered water will do equally well. The injection can be given with the ordinary hypodermic syringe used for man, and which can be carried in the waistcoat pocket. Any part of the body can be selected, but, personally, I prefer the front of the chest. It has been found that, as a rule, vomition occurs within five minutes after injection, and is copious in the extreme.

The great advantage derived from this method of administering an emetic is the ease and certainty with which it can be effected, and which anyone who has had experience of the scenes that take place when attempting to administer a nauseous draught to a pet dog with the owner and his, or,

worse still, "her," friends insisting on remaining present, will readily appreciate.

On the horse, apomorphine appears to be inert. Several experiments have been made in the College Hospital by Veterinary-Lieutenant Blenkinsop, A.V.D., but the result of these would tend to prove that it has no action whatever upon equines.

THE DISEASE "SURRA."*

BY DR. NARIMAN, BOMBAY VETERINARY COLLEGE, AND VETERINARY-SURGEON VAZ, BOMBAY.

THE following paper on "Surra," prepared conjointly by myself and Mr. Vaz, deals mostly with the experience gained in seeing and studying several cases of this disease. We have purposely omitted any theories or conjectures about the nature of the malady, as nothing reliable has yet been found regarding it, and no treatment has proved of practical value to save the life of the affected animals.

This disease has been known for a long time by the natives of India, as affecting horses, mules, and camels, under the name of "Surra" (a Hindustani word for "rotten"); from the fact that the affected animals become more and more emaciated, and die by inches, just like the animals kept in an overcrowded and stinking place. Another reason for calling it "Surra," is that the excretions of the affected animals are, in a later stage, highly offensive, especially the breath and the dung.

Causation.—It is a common belief that the animals acquire this disease by eating filth from refuse heaps outside the villages. No doubt, from our present knowledge, the disease is naturally acquired either through food or drink, as although the disease is neither strictly contagious or infectious, a number of animals living exactly under the same conditions, drinking the same water and eating the same food, are often affected at one and the same time, *e.g.*, in the year 1889-90, a number of animals died in the Bombay Tramway Company stables from "Surra." As the blood of the rats round about the place where "Surra" cases are seen, invariably contains the specific organisms, it is believed by some that this disease is acquired by horses eating the excreta of rats mixed in their grain or grass. The disease does not seem to be in any way connected with the climatic changes, as sporadic cases are noticed throughout the year and in every season.

* Read at a Meeting of the Bombay Veterinary Association, September 5th, 1892.

All sorts of animals are equally affected, whether they are properly fed or not, whether they are overcrowded or not, or whether they are properly cared for or not. Although the disease naturally affects horses, mules and camels only, yet it is communicable to every species of domesticated creature, either by subcutaneous inoculation with the affected animal's blood, by rubbing it on mucous membranes, or by feeding the animals on such blood.

Ruminants are to a certain extent refractory to the disease, inasmuch as they often do not take it even on inoculation; but they are certainly not exempt from it.

Symptoms.—The most important symptom is high fever, which is periodical, the exacerbations lasting from five to seven days, while the intervals are little shorter. In the exceptionally severe cases, the exacerbations run to even ten days, while in mild cases they do not extend to more than three days. The temperature during the febrile periods ranges between 104°F and 106°F, with slight remissions. It is during the febrile periods only that other symptoms are marked; while during the intervals the symptoms actually subside, and the animals seem at an earlier stage to be all right, save slight dulness and drowsiness. The other symptoms run more or less in the following order:—Pulse frequent and soft, breathing quick and much panting on the slightest exertion (the latter symptom is well marked, and is often the first symptom which attracts the owner's notice); distinct petechiæ on the mucous membranes, especially the conjunctiva; appetite and thirst are hardly affected, though in many cases they are abnormal; œdema of an evanescent nature on the hind limbs, beginning from the fetlock and extending upwards; œdema of the sheath and testicles extending slightly to the lower part of the abdomen; well-marked jaundice, denoted by yellowness of the membranes and high-coloured urine.

Later on there is dragging of the hind limbs and flinching on the slightest pressure over the loins; the pulse is softer and irregular, often accompanied with palpitation of the heart; the œdema of the hind limbs becomes more prominent, and œdema is even seen in the fore limbs; œdema of the abdomen, extending to the chest and breast; gelatinous or purulent discharge from eyes, and at times from the nostrils, with fulness and enlargement of the submaxillary glands; the appetite is very poor, the animal eating only a little lucerne and grain; the thirst, however, is very great, and there is profuse staling, the urine being acid in reaction and highly surcharged with

albumen. The animal now begins to roll, is very unsteady in his gait, and prefers to lie down; soon the belly is tucked up, the fæces are stinking and soft; the breath is fœtid; there is inability to rise; constant shiverings followed by jugular pulsation, groaning and death. In every attack of fever, the animal loses more than what he gains in the subsequent interval; so that he is continuously losing flesh in this disease, until before death he is a mere skeleton.

Diagnosis.—The only way to diagnose the case properly is to examine the blood under a high power ($\frac{1}{4}$-inch). During the exacerbations of fever, that fluid is full of spiral organisms *(Spirochetæ Evansii)*, which move briskly, both within and outside the red-blood corpuscles. The attention of the observer is first drawn to these parasites by the peculiar wavy motion of the corpuscles. During the intervals of the fever the parasites are not seen at all; the corpuscles appear to be broken, and in the field many small round granules are seen, some of which are freely movable. It is possible that these fast moving monads may be the spores of the spirochetæ. Parasites are seen in the serum from under the skin, but none in the secretions. Now it is a question where the parasites go from the blood in the non-febrile period. We are inclined to believe that they accumulate in the liver and spleen, for after death, when no parasites are seen in the blood, and when the red-corpuscles are motionless, examination of scrapings from the liver or spleen shows fast-moving round bodies like the corpuscles.

Post-Mortem appearances.—The spleen is generally enlarged and hard; the liver is congested, enlarged, and in many cases calcareous (in one case the liver was simply a mass of stone, from the aggregation of small calcareous particles, weighing 49 lbs); gelatinous yellow deposits in the furrows of the heart, and often extensive petechiæ under the endocardium; nematodes (round worms) are very common in the stomach and intestines.

Treatment.—Several methods were tried, but in vain. The only two worth mentioning are inhalations of carbolic acid (1 oz.) in a closed room, and the hypodermic injections of 2 grs. of corrosive sublimate in a solution with common salt; with the former the parasites disappeared from the blood in about four days, while in the latter no parasites were detectable after the second injection; in both cases, however, the animals died after lingering for a few days longer. Iodine, Iodide of Potassium, Quinine and Arsenic, have failed to make any impression on the disease.

Conclusion.—The above notes, we are sure, differ a good deal from the writings of Dr. Evans and Mr. Steel, but such is our experience and we leave to the future workers in this line to confirm or disprove our observations. Two things which require further elucidation are:—

1. Whether the secretions of rats have anything to do with the causation or spread of "Surra."

2. Whether the nematodes so largely found in the stomach and intestines of affected animals have any connection with the spirochetæ.

MALADIE-DU-COIT.

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IN the December (1892) number of this journal, I published a few notes on the above venereal disease of solipeds, and in the April number of this year Dr. F. S. Billings contributed an article on the pathology of the disease. Having just returned from a second visit to the locality where the disease manifested itself, I take the opportunity of sending a few more notes on the subject.

On visiting the seat of the outbreak in May, I found that six stallions had died, or became so bad that they were destroyed. Two are still alive, and two have been castrated. I will describe the conditions the stallions had presented, before going any further.

Among the symptoms presented by the stallions, one differs totally from all the others. This horse I mentioned in my last article. When seen by me last year, it had a number of large, hard, round, prominent swellings on the hind quarters; these the owner had blistered, which caused them to rupture and discharge a pus-like fluid. The horse was at work, and in splendid condition otherwise. It was a five-year-old stallion. A month after I had seen the horse, he began to fall away rapidly in condition, and a large number of these swellings appeared all over the body; they ruptured without the aid of blister, and discharged a white pus. The owner reports that this stallion did not show any signs of lameness or weakness behind. The other stallions that died presented, more or less, the symptoms as described in the December journal. The two stallions castrated presented a doleful appearance, being very thin, and presenting a most lifeless expression about the head. The ears were pendulous, and the upper eye-lids drooped over the eyes. The prepuce

occasionally became swollen, and sometimes one or both hind legs. They both fed well. The wounds made into the scrotum did not heal up for some time; in one case they took nearly four months. Both horses had been worked.

The two stallions that are still alive and suffering from Maladie-du-Coit present very different appearances.

The stallion at work is in poor condition, but eats well, and has the same doleful expression observed in the two diseased stallions that were castrated. The sexual appetite is completely gone. The scrotum and prepuce, one or both, are always more or less swollen, and occasionally one or both hind legs are also œdematous.

This stallion has not been worked; he is in very poor condition, weak behind, and very lame on the near hind leg; he eats well and looks bright about the head; his sexual appetite is not much affected. This is the only stallion that shows very markedly the loss of pigment; during the last twelve months he has lost a considerable quantity, particularly around the eyes and on other parts of the face. On the scrotum, prepuce and penis, areas of black pigment have returned, varying in size from a small pea up to that of half-a-crown. The very marked lameness has only come on within the last month, but before that, if the horse was made to run a few yards, which it did with difficulty, it would hold the near hind leg up, the scrotum would become of a markedly pink colour, and globules of perspiration would appear on it. The horse would stand for some minutes with the leg held up, and show signs of great pain. This stallion we have at the State Farm under observation, and it was from this stallion we obtained identically the same germ that was described in my first article on this disease. Blood was drawn from this stallion by opening the right jugular vein, the hair being first removed, the parts bathed in a 1 per cent. solution of corrosive sublimate, and the blood collected in 1 oz. sterilised bottles, made expressly for the purpose.

Regarding the mares, a large proportion of the diseased ones had died during the past twelve months, but a considerable number are alive, and suffering from the disease. Several mares covered by diseased horses, and said to have shown marked signs of the disease, have now the appearance of being quite well; while other mares, seen by me last spring, and which then only manifested very slight indications of disease, show it now to a marked degree. Some few mares served by diseased stallions, are said to have foaled all right.

The symptoms in mares have been fully described before, but one thing struck me as being of peculiar interest; some six or seven mares suffering from the disease have become paralysed on one on other side of the head, from the ear down to the lips. It is hard to say whether it has anything to do with the disease, but it is certainly a curious coincidence.

An important and interesting question to ask now is, do stallions or mares recover from the disease? So far as one can gather from this outbreak, it appears to be very fatal to the stallions, but some mares certainly did present the appearance of having recovered.

Editorial.

FOOT-AND-MOUTH DISEASE IN SOUTH AFRICA.

NOT long ago we announced the appearance of Foot-and-Mouth Disease in Central South Africa, describing its course and progress, and the alarm it was occasioning. With regard to its source and further progress, the last issue of the *Agricultural Journal* of the Cape Colony to hand has the following ovservations:—"The efforts which have been made by the Department of Agriculture to trace the origin of the present outbreak of this disease have not been so conclusive in their results as could have been desired, but it may serve a useful purpose to recapitulate the information which has been elicited. Scientific study as well as practical experience of the disease pointed to infection as the medium of its spread, and correspondence was commenced with the representatives of Government of adjacent territories with a view of discovering the probable source of the existing plague. In a communication from the Acting Resident Commissioner of the Bechuanaland Protectorate, it appeared that the disease was first reported to him by telegraph from Macloutsie as being in the team of a transport rider on his way down from Mashonaland. The officer commanding at Macloutsie at once undertook to enforce a strict quarantine, but on the 25th August it was found that the disease in a mild form was general in the Protectorate, and that contrary to expectation it had appeared at cattle posts which were far apart, and between which there was no moving of cattle or stock of any kind that could account for infection in the ordinary way. It was the opinion of Mr. Nellmapius, of Irene Estate, near Pretoria, that it came from the North by means of migratory game, and he reported that it had appeared among the animals running in his extensive camps; and that, while among his cattle and sheep there were no fatal cases, all the antelopes that took the disease died in spite of the most careful treatment. The investigations made by the Department on the general question of the origin of the disease seem to point conclusively to the fact that it first appeared in Mashonaland on the Main Road near Tuli, in the early part of July, 1892, and that it must have been introduced into the country by oxen engaged in carrying from the Transvaal. This is corroborated by the fact that it never made its appearance in Manica, or at any locality in that direction, the careful steps taken with a view to stamping

it out in Salisbury having evidently sufficed to check its spread further towards Umtali. In communications received not only from the authorities in British Bechuanaland, but also from the representatives of the British South Africa Company, it was stated that the evidence which had been received tended almost conclusively to prove that the disease came to those territories from the Transvaal, and was introduced from thence by means of the movements of transport riders."

A correspondent, writing to the same periodical from Aliwal North, Cape Colony, gives us some interesting information of a similar kind to the above. He says:—"It may be of interest to your many readers to know that the foot-and-mouth disease has had a very extended run through the adjoining Free State districts and along the Basutoland Border, though only, up to now, among cattle, neither sheep, goats, nor pigs having been infected. No deaths have occurred, and, even without remedial measures, the course of the disease has been of short duration and of a not very virulent type. The natives have found excellent results from dressing the affected parts with the remains of the fermented Kaffir corn after their beer has been made therefrom; and many of the farmers and transport-riders simply give the oxen rest, put them daily through water, and dress with Little's Dip, about 1 part to 10 of water. The disease, though not so deadly in South Africa as in European countries, must be very contagious and the germs easily distributed, as on several farms individual animals have got the disease that have never been near a main road, nor in touch with any cattle that were infected; in fact, I know of a couple of farmers that send wagons weekly from the Rouxville District to the Frere Bridge in this town—not being allowed to cross, however,—whose oxen came into actual contact with diseased cattle, and yet have not contracted it; whilst others remaining at home isolated in camps have broken out with the disease."

It is to be sincerely hoped that this serious scourge to agriculture may be kept in check and finally eradicated from South and Central Africa, as if it once obtains a permanent hold of the country, it will prove a serious hindrance to its prosperity—a matter in which England is at present deeply concerned, seeing that this part of the world now promises to be another great outlet for our redundant and enterprising people.

RABIES AND HYDROPHOBIA.

RABIES appears to be gradually extending its geographical limits, and manifesting itself in parts of the world where it was previously unknown. One of these regions was the Azores, and it is certain that until a very short time ago it had never been seen in Madeira. We noticed its occurrence there lately, and also reported that cases of hydrophobia had followed the advent of the canine malady. The scourge is supposed to have been introduced by an English traveller's dogs, he having gone on shore to shoot, taking two with him, but leaving the island again with only one; the assumption being that the missing one was rabid. Whether this be so or not, it is the fact that rabies soon after developed among the native dogs, and two cases of hydrophobia were treated by medical men in rural districts. Owing to the disease being strange there were some doubts as to its nature, but on the occurrence of other cases, the director of the Lisbon Veterinary School, Professor Roque da Silveira, was sent to the island to settle the question. This he did by means of inoculation of rabbits, by which he proved that the malady was rabies. Nine people altogether have succumbed, but since the enforcement of certain measures no more deaths have been recorded.

It may be mentioned that Professor Silveira has had the knighthood of the Order of St. Thiago conferred upon him by the king, while the Portuguese Government has thanked him for his valuable services.

The *Times* of May 20th records the death of an Englishman from hydrophobia, at Kwanjulula, Bihé, West Central Africa; so that the scourge is manifesting itself in still more remote parts of Africa.

SEROTHERAPEUTICS IN GLANDERS.

SCHNEIDEMUHL (*Deut. Med. Woch.*, February 16th, 1893), gives some account of recent researches upon this subject. It is now possible to make the diagnosis certain in otherwise doubtful cases by the injection of mallein. The author refers to methods recently introduced for obtaining this substance from cultivations of the bacillus of glanders (B. mallei, "Epitome," August 6th, 1892, par. 122). Boschetti has lately made experiments with the blood serum of horses affected with glanders, from which he concludes (1) that the injection of such serum causes a rise of temperature in animals suffering from the disease, but that this rise is less than that produced by mallein; and (2) that, since this blood serum may take the place of mallein, blood serum from the tuberculous may also take the place of the analogous tuberculin. The serum has been used for protective and curative as well as diagnostic purposes. Hell obtained from horses which had recently passed through an attack of glanders, blood serum, which he sterilised. He injected this in doses of 40, rarely 80 grammes, the horses receiving in three weeks 320 grammes. In one regiment 54 horses were so treated. In the third squadron 12 horses were injected, and after this no more cases of pulmonary glanders (*Brustseuche*) appeared. Three other horses already diseased were treated, and the results were favourable. In the first and second squadrons 39 horses were injected. There was slight reaction after the third and fourth injections. No further cases of glanders appeared. Hell has made further reports upon the good results of injections of serum in horses already diseased. In early cases the disease was brought to a standstill in three days. He adds that repeated injections are necessary for purposes of protection, and that, as regards cure, early cases and not too sparing a use of the serum are required. Toepper thus vaccinated 60 horses within two to three days with 50 grammes of the serum and repeated the injection three times. The epidemic ceased. This author holds that 150 grammes suffices for protection and confirms Hell's

opinion that the serum of horses which have had glanders has both protective and curative properties against glanders. For the latter purpose 100 grammes, repeated two or three times, are required.—*British Medical Journal.*

THE CATTLE PLAGUE IN JAPAN.

A LARGE demand for cattle has recently sprung up in Japan, owing to the increase of traffic with the United States of America, and this has led to extensive importations from the Continent of Asia, and especially from the Corea. This influx of cattle has led to an invasion of the Cattle Plague. It appears that in September last, a ship disembarked at Shitanoyemura (in the island of Kiushui), twenty-six head of slaughter cattle it had brought from the Corea. One had died on the voyage, and eight quickly succumbed after arrival, to be followed by ten more, leaving only seven. A second ship received a few days afterwards five cattle in the Corea, four of which died on the way to Japan, the fifth being landed there; and a third ship, a month later, with ten cattle from the same locality, lost nine on the voyage to Japan. The local veterinary surgeon, a Chinese, asserted that all the animals had died from sea-sickness, and this lulled suspicion; but quickly the native Japanese cattle began to sicken and die, the numbers increasing every day and the malady rapidly extending its radius. A Japanese veterinary surgeon was deputed to report upon the outbreak, and his investigations led him to suspect the existence of the Cattle Plague. The scourge soon acquired considerable extension, and passed beyond the island first invaded to the whole of the south-west of the principal island.

It was considered worthy of remark that in the sheds tenanted by foreign (American) cattle exposed to the infection, all were exempted, while in those occupied by Japanese beasts only a few escaped.

The Government of Japan ordered an experimental station to be established in November at Shirokane, in the vicinity of Tokio, and the veterinary professor, Tokishige, was made the director it. Here investigations were made into the nature of the disease which had by this time spread over nearly the whole country, and Tokishige, in the course of his researches, discovered the microbe which was supposed to be the cause of the Cattle Plague. This was a very small and short bacillus, not unlike a diplococcus. Cultures of this micro-organism inoculated into healthy cattle produced the disease in them.

GUINEA WORM IN THE HORSE.

AT a meeting of the Bombay Veterinary Association, held last December, a paper from Mr. J. C. Batliwala, Veterinary Instructor in Burma, was read relating a case of Guinea Worm (*Filaria medinensis*) in the horse, an addition to the few instances already recorded of the occurrence of this parasite in the equine species. Mr. Batliwala's account is as follows:—A chestnut Arab gelding was, in April, 1890, reported to be lame. The animal was, previous to this date, in perfect health. On examining him I found him lame on the near hind leg, but there was nothing to account for the lameness except that a small ulcer of about the size of a four-anna piece was found on the outer side of his fetlock joint, with a little swelling around it. The swelling was painful to the touch. On pressure a few drops of pus together with a thread-like white structure, resembling very much in appearance a nerve, came out of the ulcer. On pulling it out gently I was able to draw forth a few inches of this thread-like structure. As it looked very much like guinea worm, which I may say is very common in man in Katyawar, I tied up the end of the worm with a piece of thread and wrapped it round the fetlock. The next morning I was

again able to draw out about an inch more of the worm, and kept it tied round the fetlock. On the third day, however, while pulling it out as usual, the worm gave way, and the whole thread now measured in its dry state about 5 inches in length. From this day forth the animal was not very lame. Fomentations were applied over the sore and the sore healed up within the course of a week, and the lameness disappeared. There was never much discharge from the ulcer except a few drops at a time.

ANTHRAX BACILLI IN THE MUD OF A WELL.

DIATROPTOFF (*Ann. de l'Inst. Pasteur*, March), has succeeded in demonstrating anthrax bacilli in the mud taken from the bottom of a well near Odessa. An epizootic of anthrax broke out on land where numerous flocks of sheep were pastured; several of the dead sheep were buried and the others removed to another pen several kilometres distant, and having a special watering pond. The infected pen was carefully disinfected, the walls being washed with sublimate, the earth raised to a depth of 25 centimetres, and replaced by fresh soil. On their return to the disinfected pen, the sheep, which had been perfectly well in the second pen, again began to be attacked by anthrax. A new change, with a second disinfection, was followed by a recurrence of the disease on their return to the former pen. The proprietor at last noticed that the epizootic only recommenced when the water of this well was used—water avoided by the farm people on account of its brackish taste. When the well was filled up the epidemic ceased. The bacteriological examination of the water itself and inoculation of mice therewith gave negative results. The author sent for samples of the soil of the pen and of the mud at the bottom of the well from which the suspected water had been taken. No anthrax bacilli were found in the soil of the pen, but from the mud bacilli were obtained which killed rabbits and mice, their bodies presenting the *post-mortem* appearances of anthrax. Cultures made from their blood left no doubt as to the nature of these bacilli.—*British Medical Journal.*

PSOROSPERMS IN AN ADENOMA OF A CAT'S LIP.

AT the meeting of the Pathological Society of London, held on May 2nd, Mr. J. Jackson Clarke showed microscopic sections and drawings of a tumour as big as a filbert, removed by Mr. R. M. Smythe from the lower lip of a cat. It had been noticed for two or three years. The tumour was chiefly occupied by small cysts, which were completely filled with gregarinidæ. In the central part of some of the cysts were encapsuled conjugating parasites and collections of sporophores and sporocysts (pseudo-navicellæ). The case afforded complete confirmation of the author's interpretation of certain bodies which constituted the chief part of the contents of the small cysts found in scirrhous cancers of the breast. Under one microscope was placed a collection of reticulated psorosperms, and among them was one with a typical "flame-nucleus," as described by Max Wolters.* Treated with the Ehrlich-Biondi stain, they looked liked degenerated material. In cancers of the breast Mr. Clarke had demonstrated them again and again, and they had only called forth expressions of contempt. Another form met with in this case was the free gregarina filled with the corpuscles, once called "gregarina corpuscles." This form was abundant in cancers of the breast. In fresh scrapings they were mistaken by pathologists for epithelial cells in a state of fatty degeneration, though they were easily proved not to be such. Stained with the

* Archiv fur Mikroscop. Anat. 1891.

Ehrlich-Biondi stain they looked like masses of dark brown angular corpuscles. Another striking appearance met with was the presence around the older cysts of peculiar granular corpuscles, which two years ago the author would have termed plasma cells, but after having observed them in psorospermosis of the kidney and ureter, in the rabbits' liver, and in over twenty scirrhous cancers of the breast in continuity with extensions of bioplasm from the cysts into the connective tissues, he now considered them to be sporoza, which led the way to fresh epithelial extensions. Many other forms of parasites met with in cancer were also described in this case. It was still advisable, in speaking of the parasites of cancer and sarcoma, to use the term "psorosperm" as Delépine had used it in his article "Psorospermosis vel Gregarinosis." There was, as yet, no absolute distinction between the gregarinidæ and the coccididæ.

Dr. Ruffer denied that the preparations showed the appearances described by Mr. Clarke; he did not regard the structures as pseudo-navicellæ; the tissue did not contain psorosperms.

Dr. Boyce thought that some of the bodies in question were like the ova of a nematode, though against this the "ovum was spiked at one end.

THREE SPLEENS IN A CALF.

THE *Clinica Veterinaria* quotes from the *Ercolani* for January, an account of a calf, thirty-five days old, killed at the public abattoir of Modena, which was found to have three spleens that were equal in weight to a normal spleen. Two were attached to the fleshy portion of the diaphragm at a single point, and by means of a trace of the suspensory ligament of the great omentum; the third spleen adhered to the rumen through the medium of a connective tissue band. The three were of the ordinary colour and consistency of the spleen, each having a hilus and its own proper vessels.

CATTLE DISEASES IN INDIA.

THE great mortality, and consequent serious pecuniary loss from the wide prevalence of contagious diseases among animals in our Indian Empire, has formed a fruitful theme for comment in the pages of this Journal ever since its commencement, and occasionally our comments on the *laisser-aller* policy of the Indian Government in its feeble and futile attempts to interpose any effective check on the depredations, have been energetic enough. What has been a cause of much complaint has been the absence of any reliable information as to the extent of these losses and the silence of the officials as to the reasons for not adopting some effectual means of checking their ravages; for except through officers of the Army Veterinary Department, who occasionally and often incidentally referred to them, nothing could be learned. A Civil Veterinary Department has been hanging in the air now for so many years that its telluric existence may be a matter for doubt after so long a period of suspended existence; but had such an organisation been instituted and properly and energetically worked, there can be no doubt that India would now be richer by many millions of lacs of rupees in her agricultural wealth than she is at present.

However, at last we have a kind of authoritative pronouncement on the subject, and it is fair and reasonable to accept the statements made as far as they go.

In its issue for April 7th, the *Live Stock Journal* made some strong remarks regarding cattle diseases in India, and these have induced Mr. C. Benson, of the Madras Agricultural Department, to come forward with a corrective and

explanatory statement which is worthy of attention. In the course of his letter he says:

"During nearly twenty years I have had considerable advantages for ascertaining the facts, and, as far as this part of India is concerned, though it is undoubtedly true that rinderpest has from time to time—there appears to be a periodicity in the outbreaks—caused large losses of cattle, the real aspect of these losses does not appear to be always fully appreciated. The information is never very complete. The diagnosis of the cause of death is often doubtful, and very often violent purging of any sort is misnamed rinderpest by the villagers. The country is so crowded with cattle, owing to the fact that the idea of slaughter is repugnant to the masses, that there are thousands of animals which struggle through a miserable existence during our dry seasons, when pasture there is none, but which suffer severely and die off at times in crowds from the effects of eating the rank herbage which springs up after the first good fall of rain. Thus much mortality is put down to rinderpest incorrectly. Still, the fact remains that rinderpest does exist on a large scale in India, and its suppression would be most desirable. But before any means for suppression can be devised the circumstances of the country, the habits of the people, and their religious ideas, as well as the conditions under which the cattle are kept, must be borne in mind. And the problem is not at all a simple one. General slaughter of diseased animals is impossible. Segregation and isolation of sick cattle is not a thing which the people will carry out themselves willingly, and to turn a horde of sanitary policemen into a district—even if financially possible— to enforce it would not only cause an immeasurable amount of irritation and discontent, but would have much the same effect as imposing extra severe taxation therein. It would be questionable whether the remedy would not cost the people more than the disease. Besides this, as all road transport is conducted by cattle power, complete isolation of a locality would mean the entire stoppage of trade. What does more, perhaps, than another to spread rinderpest is the generally prevailing practices of communal grazing and open field farming; this, together with a want of attention to feeding, to housing, and to watering cattle, leave the field open for disease to spread far and wide, and, taken together with the ideas of the people that such diseases are the outcome of some action displeasing to a malignant deity, in the circumstances briefly noted above, the idea of repressing cattle disease by legal enactment is placed beyond the range of practical politics.

"Rinderpest in the plains of India is, moreover, of a remarkably mild character, generally, and whether, taking a broad view of the matter as it affects the country as a whole, it really does cause serious loss to the country is a question to which no really definite answer has yet been given. Nevertheless, if some really practicable measures for controlling epizootics in India could be devised, good would be done, and the Government of India has not long since formed a special department, manned by officers of the Army Veterinary Department, whose duty it will be to endeavour to devise such measures. The task is a big one, and, as far as my experience serves, I think it probable that it can only really be solved by a general improvement of the methods and practices of cattle management in vogue. Legal enactments can be of but little use in the face of a general opposing consensus of opinion amongst the people, and to talk of the ravages of rinderpest as having devastated several tracts of country, of the disease slaying its hundreds and thousands, and being a more formidable foe to India than the Russian, is incorrect, and to set out with the idea of a valley, at one time abounding in cattle, in a few weeks reduced to a valley of dead bones, is to assume as a premise to a general argument circumstances which may be partially and locally true, but which neither accurately nor even partially represent the

general aspects of the question. It is, therefore, that I venture to address you, in order to point out what appear to be exaggerations, and to show that the problem is not the simple one the note would suggest it to be."

TUBERCULOSIS IN A TIGER.

In the Botanical and Acclimatisation Gardens of Saigon, Western China, there has been observed a case of tuberculosis in the lungs and liver of a tiger. The animal was supposed to be affected with chronic bronchitis, and attempts at treatment were made, but the real nature of the disease was undecided while it was alive, as the veterinary surgeon had to make his diagnosis at a distance. The symptoms were marked emaciation, dulness, eyes buried in their sockets, dry, deep cough, quickened and irregular respiration, mucous membrane of the mouth pallid, anorexia or capricious appetite, bilious diarrhœa, and continuous *quasi* decubitus. Death took place in about twenty days from the time the animal was first observed to be ill, and the necropsy demonstrated the presence of miliary tubercules exclusively localised in the lungs and liver. The reporter of the case to the *Bulletin de la Soc. des Etudes Indo-Chinoises*, of Saigon, believed that the disease was probably due to feeding the tiger on tuberculotic flesh.

SWINE FEVER.

It is reported that the Departmental Committee appointed by the Board of Agriculture at the commencement of the Parliamentary session, with the object of inquiring into the working of the provisions of the Contagious Diseases (Animals) Acts in so far as they relate to swine fever, and to the conditions under which swine are affected therewith, as well as to consider whether any more effective measures can be adopted for its prevention and extirpation, are of opinion that the administration of the Acts, so far as they relate to that disease, and the payment of compensation for compulsory slaughter of diseased or suspected pigs, should be transferred from the local authorities to the Board of Agriculture. It is also stated that the advantages which have resulted from the adoption of this course in the case of contagious pleuro-pneumonia of cattle, are widely appreciated, and that, fortified by the expression of independent and expert opinion which the inquiry has elicited, the President of the Board, Mr. Herbert Gardner, may be expected to lose no time in introducing a Bill authorizing the suggested change. It appears the Committee have also recommended that the scale of compensation for compulsory slaughter be raised from £4—the present allowance—to £8; and that steps be taken to ensure improved sanitary conditions in all places where pigs are kept.

Army Veterinary Department.

Gazette, April 28th.

Yeomanry Cavalry.—Staffordshire (Queen's Own Royal Regiment). Frederick George Warmington, Gent., to be Veterinary-Lieutenant.

Gazette, May 9th.

C. B. Freeman, Gent., to be Veterinary-Lieutenant, vice A. G. Sneath, deceased.

It has been decided by the Indian Authorities that no veterinary lectures will be delivered at Simla this year.

Obituary.

We much regret to have to announce the death of a young officer of the Army Veterinary Department, Mr. Seath, M.R.C.V.S., who died of enteritis at Meerut, India, on April 27th. He graduated so recently as May 17th, 1889, and was gazetted to the Department on February 3rd, 1892, proceeding to India in October of the same year.

Professor Reynal, ex-director of the Alfort Veterinary School, died on March 31st, at Dammartin, Seine-et-Marne, where he had lived since his retirement from office fourteen years ago, aged seventy-eight years. Passing from that school as a veterinary-surgeon in 1837, he entered the army, in which he served with Cavalry until 1847, when he became professor of clinical medicine at Alfort, and in 1860, succeeded Delafond in the chair of pathology, therapeutics, and materia medica; finally, in 1870, he became director of the school on the voluntary retirement of Magne from that post. During the thirty-three years he was connected with the teaching staff of the school, as well as during his army service, he published many important papers relating to sanitary police, therapeutics, jurisprudence and physiology, as well as pathology, these appearing in the *Recueil de Méd. Vétérinaire* and the *Archives Vétérinaire*. In 1873, he published his *Traité de Police Sanitaire*, a work of some value. He was a member of the Academy of Medicine, and an Officer of the Legion of Honour.

The following deaths have also been reported:

W. Wright, M.R.C.V.S., Tideswell, Derbyshire, who held the H. and A. S Certificate of 1857, and became a member in 1880.

C. R. Marking, Poppesfield, Essex, who also held the Certificate of 1873, and became a member in 1880.

Parliamentary Intelligence.

House of Commons, May 18th.

SWINE FEVER.

Mr. Jeffreys asked the President of the Board of Agriculture whether he could state whether he proposed to take any action in order to carry out the recommendations of the Committee on Swine Fever.

Mr. Gardner: I am afraid that as yet I can only refer the hon. member to what I said in reply to the questions addressed to me on this subject a few days ago. I have not yet received the evidence on which the report of the Departmental Committee is founded, but I understand that it will reach me in the course of the present week, and we shall then be able to see how far it will be possible for us to give effect to the conclusions at which the committee have arrived.

Mr. Chaplin: Arising out of that reply, may I ask the right hon. gentleman, as a matter of fact, whether in the report of the Departmental Committee on Swine Fever there is any information whatever which could not have been obtained in his own Department without the appointment of any such committee at all; and whether, under these circumstances, he cannot make up his mind to deal with this question, so important to the agricultural interest, and to carry out the recommendations of the report without waiting for the evidence upon which the report is based.

Mr. Gardner: I must refer the right hon. gentleman to the report.

Mr. Chaplin: Well, then, I will ask whether the right hon. gentleman can say what the information is in the report which he could not have obtained in the Department, and, failing an answer to this question, I shall take the earliest opportunity of raising this question again.

Mr. Gardner: I cannot give the right hon. gentleman any further answer on the subject.

Proceedings of the Royal College of Veterinary Surgeons and Veterinary Medical Societies, etc.

EXAMINATIONS OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

THE Written Examination in the various classes was held on May 8th, in London, at the Examination Hall of the Royal College of Physicians and Surgeons, on the Thames Embankment; and a meeting of the Court of Examiners was held at Red Lion Square on and between May 9th and 12th, 1893. The following students from the Royal Veterinary College passed their examinations:—

Final Examination.

Mr. J. T. Priestner	Mr. E. P. Barry	Mr. W. H. Hunting
„ W. B. Edwards	„ E. J. Thorburn	„ H. Whitlamsmith
„ A. Blake	„ F. Mosedale	„ C. Beadnell
„ E. E. Clode	„ S. H. Nye	„ R. Shepherd
„ J. W. Thomas	„ F. W. Hunt	„ G. Walker
„ S. S. Broad	„ R. F. Ring	„ T. Brain
„ E. Ringer	„ J. H. Shepherd	„ H. W. Davie
„ A. Hawes	„ F. Scott	„ C. Delacherois
„ H. T. Sawyer	„ S. Burton	

The following students passed their Second examination:—

Mr. G. R. Stallard	Mr. S. Cadogan-Masterman	Mr. H. C. Reeks
„ J. W. Baxter	„ J. T. Coley	„ D. W. James
* „ R. H. Over	„ W. S. Anthony	„ J. S. Wood
„ W. Davies	„ H. L. Roberts	„ T. J. Frost
„ H. Barnard	„ P. W. Hill	† „ A. H. Clapp
„ L. Barnard	„ W. Paner	„ F. M. Skues
* „ G. W. Freer	„ F. K. Henton	„ W. Beddard
„ F. S. Stanley	„ P. Brownrigg	„ H. Low
* „ W. J. Foreman	„ M. C. Tailly	„ V. Gazi
„ H. Walpole	„ H. Bowker	„ G. Dunne
„ H. Peele	„ R. Spooner Hart	* „ C. Hoole
* „ H. E. Browne	„ W. C. Prudames	† „ H. W. Prime
* „ W. L. Harrison	„ R. W. Balls	„ F. Richardson
„ J. Tagg		„ S. Pennington

The following students passed their First Examination.

Mr. S. Young	*Mr. J. Dunstan	Mr. A. Maynard
„ C. W. Stanley	„ W. A. Bull	„ W. R. Clarke
„ W. Pennington	„ R. P. Thomas	„ J. H. Wynne
„ O. G. Hills	„ G. Conder	„ F. B. Hodgkinson
„ A. E. Payne	„ R. C. Mathews	„ G. Watkins
„ W. T. Colwell	„ B. Sumner	„ J. Idenden
„ H. Mitton	„ C. E. Wells	„ E. W. Parks
„ F. W. Trydell	„ W. Burt	„ E. B. Bartlett
„ H. W. Griffith	„ I. W. Jones	„ G. Elmes
„ H. O. Johnson	„ C. H. Spurgeon	„ P. J. Hagmaier
„ J. H. Burnet	„ J. P. Heyes	„ A. J. Moffett
„ E. Stanley	„ H. W. Young	„ K. H. Worrow
„ W. N. Thompson	„ J. Webb	„ R. Hudson
„ E. T. Wood	„ J. S. Pike	„ J. Hughes
„ R. G. Gillard	„ P. S. Howard	„ J. Balden
„ J. B. Southey	„ H. P. Standley	„ C. E. Parker
„ H. Bibbey	* „ W. J. Browning	

ARTHUR W. HILL, *Secretary.*

Marked thus * passed with great credit. Marked thus † passed with very great credit.

THE CENTRAL VETERINARY MEDICAL SOCIETY.

(Continued from page 346.)

Mr. HENRY EDGAR said: I must first personally thank Prof. Macqueen for one of the best demonstrations I ever heard on the sinuses of the head, and I am sure he deserves the hearty thanks of this society for the care and trouble he has taken in bringing so many specimens before us, but to my mind he has not quite completed what he undertook. He has failed to show us the state of the parts that actually exist in a case of ozœna or nasal gleet. If he had produced a head with pus in the frontal and maxillary sinuses, or one of either, we should then have been able to see the actual state of the openings and the various conditions of the different parts that were affected: as it is we are still left to conjecture their condition in a state of disease. I cannot think that it would have been impossible for him to get such a specimen, with the numerous opportunities he must have.

I shall not pretend to discuss the anatomical part of the professor's demonstration, but must take exception to some of his statements as to the possibilities or impossibilities of certain things. I think first of all we must draw a distinct difference between those cases where there is pus in the frontal sinus and pus in the maxillary sinus, because I feel certain that our success and mode of treatment must vary accordingly. I do not believe it is possible to cure a case of pus in the maxillary sinus without surgical interference, but I am *absolutely certain* that it is possible to cure a case of pus in the frontal sinuses by proper and judicious injection of a solution of Hydrastis and the same medicine given internally, because I have cured at least three good cases of the latter. Possibly some friends will argue, that unless I opened the sinus by some means I had no proof that there was pus in the cavity; I will deal with this presently. I would here just like to remark that in one specimen shown, the professor said the opening was so large that no feather or mark was required, and another was, he considered, abnormal because he could pass three fingers through the opening. I also notice that out of 50 skulls, 11 of them had large openings; now this is a large proportion—much larger than the percentage of cases of nasal gleet, and what proof have we that these cases do not occur in those animals that have these large openings? Again, we must remember that we are looking at the dead animal, and naturally the membrane round would be fuller than during life; and yet again I suppose none of us are prepared to state the exact position and condition of this particular opening in the living animal. Another rather significant fact is—of course I speak subject to correction—that the majority of the large openings occur in aged animals, and from my experience the majority of cases of nasal gleet certainly occur in aged animals. When, then, the sinus or sinuses become filled with pus, may not the distension produced have a tendency to make the opening still larger? I particularly noticed that the professor was rather quiet and did not particularly emphasize the deeply-stained specimen, which I believe was not even required to be passed round the room. However that may be, he has undoubtedly proved to us that it *is* possible to inject all the sinuses of the head, even in the *dead* subject. Never mind if he failed in 50, he succeeded in one; that upsets the impossible theory. It may be stated that the subject was an exceptional one. Granted—so many cases of nasal gleet occur in exceptional subjects; it is none so common that we can say it occurs in all animals. I think we should be very guarded before we say anything is impossible. I believe about the only impossible thing in the world is to convince a man that he is wrong when he has made up his mind to a certain line of thought. Why, 10 or 20 years ago we should have said it was impossible for a horse to trot a mile under two minutes ten seconds, but it has been done in 2-5¼ seconds.

Now, as to the cause of some of the cases of nasal gleet, that we are unable to fully explain. It has been said that some cases are due to, or the result of a cold. I must confess that I have never heard it satisfactorily explained how this is brought about. I presume the line of argument is that the whole of the mucous membrane, including that of the sinuses, becomes congested and throws off a discharge which is unable to escape. If this is so, how is it the cases of ozœna are not more common? Besides, we very often get obstinate cases of nasal catarrh without collection in the sinuses. If it does arise from this cause, how long must it be in existence before the fœtor arises, either from the inspissated pus or diseased turbinated bone; surely some considerable time? I would suggest, is it not possible that very many of the cases of nasal gleet arise from injuries from without, such as a blow? What is more common than for a horse to hit his nose against a manger or post in turning in the stall, or from pressure from a bridle, or in many different ways? It seems to me that this is at least feasible, and worthy of consideration. Once again, are we absolutely certain that the whole of the discharge that is in these cavities, and that runs away intermittently in nasal gleet, is all secreted by the membrane lining these sinuses, or how does it get in there? It comes out we know, so there is an exit if not an entrance. If Mr. Goodall had argued that in his case of choking the ingesta had got there through an *expiratory* effort, I should have agreed with him, but surely not during *inspiration*.

Now as regards treatment. It seems to me, if I may use the term, that most of the papers on this disease, as far as treatment is concerned, have been *destructive*. One has tried to knock down a treatment that another has upheld. Mr. Goodall did not advise any course of treatment. Prof. Macqueen tried to upset certain treatments that had been suggested, without advancing or suggesting anything better or more efficacious, and I believe Prof. Smith did the same. Now surely if such demonstrations and discussions as these are to be of any practical value, they ought to help us to treat our cases more effectually—with the least possible amount of risk to the patient and owner. I maintain that no surgical interference should be resorted to where medicinal agents can and will cure—we are not justified in adopting surgery unless medicine has unquestionably failed. You will notice that I said just now that Prof. Macqueen succeeded in injecting the sinuses of even a *dead* animal. Now if there is a time when you are likely to fail in trying to get any fluid into the sinuses of the head it is when the animal is dead, and especially if you use an *enema syringe*. Is it possible that such an instrument is ever used for such a delicate purpose by any professional man? If so I do not wonder that injection failed; the way to succeed is not by such methods. If I am to be successful in treating by injecting fluid, I must have a living animal, because I greatly rely upon the expiratory efforts of the animal in distributing the fluid, it may be in the form of a spray, over the affected mucous membrane, including the frontal sinuses; and for that I do not want to send a stream that will well nigh wash the head away, as an enema pump would do, or an instrument like the one that has been shown to us.

Prof. Smith asks is it possible to get the pus absorbed? This is in the sinuses, even if you succeed in arresting the secretion. I do not think we are yet in a position to limit the power of absorption, nor to fully explain how the frontal sinus becomes emptied.

The three cases to which I have alluded were undoubtedly cases of nasal gleet, with pus in the frontal sinuses but not in the maxillary. The discharge and breath were very fœtid, the former had been in existence for a considerable period; the frontal sinuses were very tender, and the discharge was intermittent and lumpy. When the head was held down the discharge

came much more freely. I did not bore the sinuses with a gimlet, because had I done so I considered I should have set up more irritation—there was enough already, and I should not be justified in aggravating a case and possibly render an operation necessary. What more do you require to prove a case of nasal gleet?

I do not consider that the ponies from the mines proved anything in regard to getting fluid into the sinuses of the head, granted that they were living in an atmosphere of dust for two years. We must remember that the mucous membrane of the respiratory tract is moist, and the dust would *settle* on the mucous membrane in the direct line during inspiration, even to passing into the lungs, and probably would never get a chance of passing into the sinuses, which would occur during expiration—for once it settled on the membrane it would not move much more. I think the same remark applies to insufflation of any powder—I have never found any benefit from it. When we begin to debate about the physiology of some of the parts of the animal body we are treading on delicate ground. As Prof. Macqueen stated, "physiologists may romance," yes, but still the functions of the different parts remain the same; and perhaps it is wiser for us to at once admit that there are functions of certain parts of the animal body that have been wonderfully provided; and that even the stupendous yet finite mind of man has not been able to unravel.

I must apologize for taking up so much time, but I felt I could not allow all the statements made to go unchallenged. In my opinion, although Professor Macqueen has given us a most instructive and valuable demonstration, he has failed to prove that it is impossible to successfully inject the sinuses of a horse's head affected with nasal gleet.

Prof. SMITH said he wished first to say a word or two about the probe, which it had been shown could not always be introduced into the head, and in the demonstration which Mr. Goodall had given them, he had found it necessary to support the probe by placing his hand in the head and assisting the insertion.

Mr. GOODALL: Not at all. I never touched the head except to hold it.

Prof. SMITH: I think you found it necessary to support the turbinated bones with your hand.

Mr. GOODALL: Not at all.

Prof. SMITH said he did not doubt the possibility of passing the probe, but it was apparent that there was extreme difficulty in executing this surgical manœuvre, and the result desired could be more readily attained by making a hole in the front of the face. (Mr. Goodall: "But the owners object.") Capt. Raymond had alluded to the use of the gimlet. That he (Prof. Smith) considered to be a most valuable means of diagnosing cases of nasal gleet; and although they had it on the undoubted evidence of gentlemen who had spoken at that and preceding meetings, that nasal gleet or ozœna could be cured by the injection of remedies into the nostril, he must confess that he was sufficiently biased and prejudiced to consider that it would be necessary, in order to convince, that a hole should in the first instance be bored in front of the face to see if there was any discharge, and if then such cases recovered after nasal insufflation, he should say that he had made a distinct error in statement. Recently he had a case of nasal gleet in a pony and he determined to carry out thoroughly the methods laid down by Messrs. Edgar and Hurndall, by washing out the nostrils with a solution of Hydrastis, and in order that he should make no mistake about this case he introduced a gimlet into the front of the face and got a muco-purulent discharge; hence it was reasonable to suppose that the sinuses were diseased. The operation of syringing out the nostril was carried out daily by himself, and he must confess that at times the discharge ceased for a few days and he thought a cure had been effected, but after a short time the discharge from the nose re-commenced. He could not,

unfortunately, see the end of this case, as he had to hand it over to somebody else, but for five weeks he adopted the methods recommended and could positively say that at the end of that time he had not cured the patient. Whether the same treatment had been carried out since he could not say.* Mr. Edgar had propounded a question which he was not prepared to answer. He could not say how many ounces or pounds, or what kind of drugs were needed to treat disease, but he thought that they required more than three or four drops, or a few grains to disinfect the sinuses of the horse. He could not conceive that a small amount of fluid entering those sinuses through a hole in the nostril, could be of the slightest use. He was sufficiently biased to think that such a procedure would prove no remedy whatever.

Mr. HUNTING: Having spoken at the last meeting, if I may now intrude, I just wish to mention a case that I have now on hand, as an illustration of the difficulty of diagnosis. I had a horse with a fœtid discharge from one nostril; I could not make out what was the cause, and, therefore, I put a gimlet into his frontal sinus, and also into his maxillary sinus, and found no matter in either of them. I then tried him with mallein, and it gave no reaction. I then ordered him to go to work, and I remain in blissful ignorance of the cause of that nasal gleet now. What I want to say is, suppose I had put the horse on Hydrastis or used the insufflator, what a cure it would have been!

Professor SHAVE said he had just one or two remarks to make in connection with this debate as to the opening between the second turbinated bone and the sinuses of the face. Of course, he thought that they were agreed that this opening was, in the majority of cases, a slit-like opening about the size that would admit, say, a blade of a knife flatwise; and that in many instances, however, this hole was much larger, sometimes even so large as to admit one or two fingers, but he thought those cases must be regarded as exceptional. He could hardly see why some gentlemen had suggested that in those latter cases the horses were liable to suffer from nasal gleet more often than those in which the hole was smaller. As Mr. Edgar said, they had not brought cases there to show that the hole was or was not large in instances in which animals had suffered from nasal gleet. With regard to the valve that had been referred to, which was supposed to guard the opening between the nasal passage and the frontal sinus, this, he thought—if they regarded the matter generally—they must look upon as a myth. No one had suggested any answer to the question why a valve should be necessary in this position. Air went in and out of the sinuses. That, he thought, was perfectly certain, a fact demonstrated by Colin and by Prof. Macqueen. If, then, air passed in and out of these sinuses, why did they want a valve? Was the valve to shut the air in or to let it out? Neither, for if they looked at this so-called "valve" they found it was near the membrane, from the posterior part of the inferior turbinated bone on the side of the nasal chamber, and below was the lower border of the superior turbinated bone, and this was membranous, this part, but it was not true that the posterior part of the inferior turbinated bone was membranous—that was distinctly bone. He could show them a number of cases where it was distinctly bone at five years.

Mr. GOODALL: I say it is bony, but that it is collapsible.

Prof. SHAVE: Of course it is collapsible. It is only a matter of sufficient pressure and most things are collapsible. With regard to the filling of the sinuses, he went on to say that no doubt the sinuses were filled during the expiratory effort. He thought that there was no doubt about that, and no difficulty in their demonstrating the fact. In this connection he thought they might understand how nasal inflation might be of some benefit in some diseases of the frontal sinuses. Of course in the case of iodoform injected into the nostril, air passing over it and into the nasal chamber would evaporate

* I have since ascertained that no further treatment was adopted, and that the pony *was cured*—F.S.

it. As the air passed over the iodoform it helped to burn a certain proportion of it, and a very small quantity would enter the frontal sinus. Although a very small quantity, it occurred many times every minute and went on night and day, as long as this iodoform or other volatile substance remained in the nostril. He could understand how, by means of Hydrastis or other volatile substance, the sinuses might be medicated, but if the sinuses were full of pus, how was that to be got rid of with a little Hydrastis or a little anything else put up the nose? How was the pus to be removed? The fluid, perhaps, might be absorbed, but what about the solids? They would remain, and not only remain, but would undergo decomposition through the air, and give rise to further irritation and, he thought, refill the sinuses with pus. Hence, although he did not think that they should omit to use nasal insufflation, yet when they were satisfied that pus existed in any quantity in the frontal sinuses, he thought they were fully justified in advising the owner of the horse to have recourse to trephining. He did not suggest that in every case of discharge from the nostril they should trephine the animal at once. He thought that that would be going to the other extreme and would be wrong. Let them try the insufflator, let them try to wash out first—and Prof. Ray's was an admirable instrument for the purpose—let them try to wash out with a disinfectant, and let them inject anything they liked, but he urged them not to dilly-dally thus six or seven weeks without effect and then find they must trephine the horse after all. The owner of the animal in that case might say —and he would be justified saying it—"Why did you not trephine before?" As to ingesta in the sinuses, Prof. Shave said he could quite understand how, under certain circumstances, when a horse was *in extremis*, material might be forced from the thorax, and so into the nose, and so find its way into the sinuses, supposing the hole to be of considerable size. He should like those gentlemen who had spoken of horses with large holes in the middle meatus as more liable to nasal gleet than other animals, to adduce some reasons why they thought so. He should like, too, some explanation as to why the membrane round this opening was fuller after death than before. He had himself tried with powders, with fluids, and with solids, to inject from the nasal chamber into the frontal sinuses, but up to then he had not succeeded. Mr. Edgar did not think that Prof. Macqueen had demonstrated the impossibility of injecting the sinus. No, he (Mr. Shave) did not expect that anybody ever would demonstrate an impossibility.

Professor MACQUEEN, in reply, said that he had no idea his address would have evoked so much attention, and although he invited earnest criticism, yet he did not expect that his address would receive so much criticism. However, he was pleased to find that his statements had not been received with entire credence. First, he noticed the important letter which had been received from Mr. Hurndall, who wrote to say that he (Mr. Macqueen) had proved the opposite of that which he intended to prove. Mr. Hurndall formed, he believed, one of the audience at a meeting of the Royal Counties V.M.A., which audience was particularly responsible for the remark which he (Mr. Macqueen) applied to Mr. Goodall at the last meeting of the Central V.M.S. Mr. Macqueen still thought, and he repeated, that the members of the audience to which he referred seemed to him to comport themselves like Ulysses' sailors, who mistook bags of wind for sacks of treasure. Mr. Goodall accused him of being sarcastic, but no man could be more innocent of sarcasm than he was. He was perfectly guiltless of any intention to be sarcastic. He simply spoke the truth, or endeavoured to do so. And Mr. Goodall said he endeavoured to ridicule his specimens. He did not ridicule that gentleman's specimens. Far from it, he honoured Mr. Goodall as an excellent worker, he admired his specimens, he praised his industry, and he considered that they owed Mr. Goodall a debt of gratitude; but he thought that they should not exceed the

bounds of reason in the measure of their thanks. What Mr. Goodall meant by saying that he ridiculed his specimens, referred not really to him (Mr. Macqueen) at all. If they recollected the discussion which followed Mr. Goodall's paper, they would remember that Professor Edgar (who was not present that night) unfortunately said that one of the kindest, and, perhaps, best actions that Mr. Goodall could perform was to make a present of his specimens to one of the veterinary colleges. He (Mr. Macqueen) considered that that was a gratuitous insult. The colleges did not need those specimens, and he brought a few there at the last meeting to show that the college to which he belonged had no lack of specimens. He had stated that his specimens were not intended for a museum, that was all. (Mr. GOODALL: "But there is a way of saying it.") Undoubtedly there was a way of saying it, but that he reserved to himself. Now he had listened attentively to Mr. Goodall's attack on the authority of books. Did he make anything of it? He (Mr. Macqueen) had with him the very quotations he used on the previous occasion, and he must say that he followed Mr. Goodall that night very closely, and he did not consider that he had made a single point. He (Mr. Macqueen) admitted that in following the quotations he gave they might not, perhaps, have been able to master the exact details of those peculiar openings, but for practical purposes the text books of the day were amply sufficient—were, indeed, far more than they required. Then as to the passages to which reference has been made, everyone knew what the functions of the three passages were; they knew that they were respiratory, but they did not know what the function of each was individually. (Mr. GOODALL: "Go to the dog.") Now, without entering upon a dispute of this kind, he purposely abstained from making a single remark regarding the function of olfaction. To enter into a discussion with respect to this would, he felt, occupy too much time. They were told by Mr. Goodall that it simply remained for them to go to the dogs. Well, the dog had a very complicated nasal apparatus, and he maintained that the passage in the dog was not specially designed for any special function; and that the convolutions of the turbinated bone in the dog were simply for breaking up the respiratory wave into a series of secondary waves. With regard to the sinuses, Mr. Goodall maintained that they were chiefly olfactory, or entirely olfactory. He (Mr. Macqueen) had been thinking over the function of the sinuses, and, with Mr. Goodall's permission—he was a very good-natured gentleman—he should utilise one or two of his specimens. He wished to direct their attention to the sinuses, as to what their function might be. He thought it was in connection with the teeth. The reason why the molar teeth of a horse were gradually pushed from the surface had never been explained by text books. (Mr. GOODALL: "I mentioned that in my paper.") He must, then, have missed Mr. Goodall's explanation. He did not remember he explained how the teeth were forced out. Now it occurred to him that the opening of the sinuses was designed to allow of an accumulation of air for the purpose of atmospheric pressure, and that the air pressed upon the molar teeth and gradually exerted a certain amount of pressure on the fangs of the teeth. But the moment one went a little further and came to the first, second, and third molars, it was found that there was no space above them, and the lower jaw had no space beneath the teeth. Many theories might be propounded regarding the functions of the sinuses, but he did not think they were olfactory, and for the present he thought that the text books were quite correct as far as they went regarding the functions of these spaces. Now Mr. Goodall objected to his remark about the eustachian tube. He maintained that the eustachian tube was not narrow. No opening could be narrow which would admit the points of two fingers. As to the inflation of the sinus in the newly-born foal, he said that Mr. Goodall had contradicted himself. He first asserted the existence of the sinus in a 240 days' fœtus, and then told his audience that the

sinus was not inflated before the first act of respiration. What then became of the sinus in the interim; between its existence in a fœtus at the 240th day and the day of birth?

Next, with regard to erectile tissue, Mr. Goodall quoted Mr. Lennox Browne, and centred his remarks upon the mucous membrane of the nose of man. Well, he (Mr. Macqueen) had no knowledge of the mucous membrane in the nasal chamber of the human subject. He had not the slightest doubt that every mucous membrane in man performed a useful function. There was no doubt that man requred a superior mucous membrane to the horse. They did not see horses attending flower shows, or tasting wine, tea, and so on. For his facts regarding the structure of the nasal mucous membrane he preferred to take what he found himself, and in order to ascertain whether his findings were right or wrong he went to some authority who had paid particular attention to the horse's mucous membrane. He knew a work on surgery by Peuch and Toussaint, and in this and in Chauveau they would find excellent descriptions of the structure of the mucous membrane in the horse. In neither of these works was there the slightest allusion to erectile tissue. It was requisite to know what Mr. Lennox Browne meant by erectile tissue. In no part of a horse's nasal mucous membrane was there any evidence of erectile tissue as it occurred in the penis, for instance. Mr. Goodall accused him (Mr. Macqueen) of misquoting his pamphlet. Well, he had seen his pamphlet, but had no time to make a direct quotation from it, and he was not aware that his quotation was wrong. He certainly gave him the impression—which he conveyed to others, that it was a very simple process to force through the middle meatus into the sinuses a medicated solution, a drug, a powder—that there was nothing difficult attending the process. He directly contradicted that, and he observed that when Mr. Goodall attempted to explain it he alluded to the opening through the frontal bone, and in that way, no doubt one would be able to succeed in injecting the sinuses. The impression which his words conveyed was that the operation could be easily performed. (Mr. GOODALL: "I distinctly said not easily.") He said it could be easily passed. (Mr. GOODALL: "Not easily.") Very well. But apart from this, their object in practice was not to push probes into the sinuses of the head; their object was to get the pus out, the collection of material that had accumulated there, and that object was not to be gained by pushing a probe in. Hence he failed to see what object was to be gained by pushing a probe into the middle meatus, even if it could turn a corner in the middle canal. (Mr. GOODALL: "There is no necessity to turn a corner; it is perfectly straight.") Mr. Goodall asserted that the valve opened and closed. He said so at the previous meeting of the society, and after a month's reflection he still adhered to this statement. He (Mr. Macqueen) denied it; he maintained that in the majority of skulls it was not possible for the valve to open and close. When he first examined this valve he thought that he had discovered the whole key to the secret. He found that by pressing upon the inferior turbinated bone, from the increased tension of the air in the anterior sinus, that this part of the inferior turbinated bone being flaccid, movable, the respiratory wave would cause the valve to close. So he said, "Eureka! All right. Mr. Goodall is proved correct." But in the very next skull which he took up, he found that this part was perfectly bony and hard, that it would not yield to ordinary pressure of the finger over it. He found the incurvation of the inferior turbinated bone was perfectly ossified and did not move. They must remember, too, what was not sufficiently emphasised at the previous meeting, that after the preparation of the specimens and their immersion in antiseptics, those structures were all somewhat softer, and any interpretation of their functions was, therefore, misleading. Let them go to a fresh specimen and take an average case; not one of two years old, but one of a very different class; and they would find

that the majority of heads would show this region perfectly ossified and immovable to any ordinary pressure. As Professor Shave pointed out, the "flexibility" of the membrane was simply a relative term. It depended entirely upon the amount of pressure brought to bear upon it. Even a burglar could open a safe if he applied the requisite amount of pressure. In the normal life of a horse ossification advanced from behind forward, and the older the animal the firmer was this portion of the nasal chamber. As to the valve opening and closing, he had found in a large number of cases that the only way to introduce the probe was by forcing the passage. It was impossible in the majority of instances to pass a flexible probe without disturbing the attachment.

Mr. Goodall now arrived at the conclusion that it was impossible in the majority of cases to medicate the sinuses from the front. Now that was what he considered a candid statement, and what he endeavoured to prove on the last occasion. (Mr. GOODALL: "By any amount of force.")

Capt. Raymond did not allude to him, but he should refer to him, nevertheless, and say that that gentleman mistook the point. He (Mr. Macqueen) did not insist upon the abolition of insufflation in ordinary nasal catarrh. He simply said that it was impossible in the majority of instances to insufflate the sinuses. Capt. Raymond's remarks were conclusive regarding the insufflation of the nasal membrane in cases of disease, but where the disease extended into the sinuses, and where the sinuses contained a collection of pus, then he (Mr. Macqueen) maintained that insufflation in the majority of cases was useless. Both Rey's tube and the enema syringe were useless for this purpose. He would show them why. (Professor Macqueen then demonstrated his contentions by manipulating one of Mr. Goodall's sections.) He maintained that no dry spray would enter the sinuses if the opening was of the average size. The moment the spray left the insufflator it was caught up by the mucus.

Capt. RAYMOND: Would you go a step further and explain about a spray solution, say of ether or something like that?

Prof. MACQUEEN: I am speaking about a dry spray: you want a moist one.

Capt. RAYMOND: A moist one.

Prof. MACQUEEN: I cannot speak about a moist spray, but a dry spray will not enter the sinuses if the opening is of the usual size. He went on to say that he had never succeeded, when holding a horse's head in the ordinary position, in injecting fluid into the sinuses by means of Rey's tube, and an enema syringe also failed. He did not pretend to say how it failed. Since the last meeting he had tried in three or four cases, and failed to force liquid into the sinuses of the head of a dead animal, so long as that head was held as in the living subject. He accepted the reason of Mr. Rogers, their secretary, as a feasible one to account for how the coloured liquid found its way into the sinuses when the head was held in a certain position—on the side—which Mr. Macqueen illustrated. Mr. Rogers' theory was that by means of the enema syringe the liquid passed along the middle meatus, and trickled into the first part of the opening, and as it passed in, it forced the air out. In this way the sinuses became entirely medicated. Since the last meeting he had laid a dead horse on its side and injected the lower nostril in both sides of the head. Thus he had succeeded in injecting the liquid, but he asked them to remember that a good part of the fluid did not enter the sinuses at all, but went down the animal's windpipe. That was where it went. He held that it was a very dangerous proceeding for any veterinarian to attempt to medicate the sinuses of the head with the horse cast and its head lying on the side. Mr. Edgar said that the fact of no dust being found in the sinuses of pit ponies did not show that liquid would not find its way there. That was perfectly true. He did not allude to the pit ponies with any such

object. Mr. Goodall suggested, and had again that night represented, that foreign matter such as dust could find its way into the sinuses of the horse's head, because he discovered one case where ingesta was found in the sinuses. It was suggested to him (Mr. Macqueen) that a pit pony, exposed in a dusty mine for a long period of time, might reveal some dust in the sinuses. Hence the skulls he produced on the last occasion, in neither of which was there the slightest evidence of carbon in the sinuses. In conclusion, Mr. Macqueen thanked them for the indulgent and attentive way in which they had listened to his remarks, and he denied any intention to be sarcastic. If he had been, that was his misfortune and not his fault. He was really one of the most agreeable individuals possible, and this everyone who knew him would readily testify. He was glad to have had the opportunity of addressing them on this subject. He had undertaken the examination of the skulls he had produced, because, as he said at first, he did not agree with Mr. Goodall's findings; and he thought he had shown to the satisfaction of many gentlemen that the opening in question was usually very small, that insufflation of the sinuses was usually an impossibility, and that the only way to succeed was to return to the practice of their forefathers and trephine the horse's skull.

Treatment of Roaring.

The CHAIRMAN: Professor Smith has a communication to make to the Society.

Professor SMITH: I am permitted by the courtesy of our President to speak to you for a few minutes on a subject which does not appear on our agenda paper to-night. In the first instance, I have to apologise for bringing to your notice a subject which is at present very immature, but one which is at the same time so full of practical importance, that I do not hesitate, even in its present condition, to ask your indulgence to bring the question before you, and with one special object, and that is to ask your assistance. You will remember, of course, that the methods of surgical interference which have hitherto been adopted for the relief of roaring have consisted in the removal of some portion or portions of the larynx. The result of that interference has not, up to the present, proved very satisfactory, and it occurred to me that we might, perhaps, tackle this disease through its original channel, namely, through the nervous system, and what I have ventured to believe might be done was this: to put the left recurrent nerve, which had lost its function, on to a sound motor nerve and suture it there, and endeavour thereby to effect a union, and, if possible, to get motor power supplied to the originally paralysed larynx. To this end the left recurrent nerve having been divided, was sutured to a branch of the spinal accessory. I was surprised to find how rapidly union took place. But, gentlemen, we want something more than mere union, we want to get motor impulses sent to the larynx through the branches of nerve thus united, and it is this which we have yet clearly to prove.

I found when the time arrived for exercising this animal that the amount of noise was something comparatively slight, whereas, considering the left recurrent was completely divided, he should have "roared" badly. He remained at exercise some weeks and made distinct improvement. So great was the improvement at the time he was destroyed for dissection, that I have no hesitation whatever in saying that the slight defect in breathing could only be detected by an expert.

On examining the parts, I found that a complete union had taken place between the left recurrent and the spinal accessory. Naturally the condition of the larynx was the feature of the greatest possible importance. The laryngeal muscles had wasted on the left side, but instead of finding them of the colour we usually do, namely, a yellowish-white, I found they were pink,

and so distinctly pink that I had to obtain the assistance of three or four unbiassed persons to determine if possible what difference in colour existed between the muscles of the right and left side. Microscopical investigations showed a fatty change; but it was perfectly clear that a certain amount of nerve force existed on the left side of the larynx, and sufficient nerve force to prevent the horse making any considerable amount of noise.

I therefore ask simply for material to work with. I do not say for one moment that I am right. I do not wish to impress upon you that at last we have got a cure for roaring. I have simply related to you the facts as they have transpired. The material facts are in the hands of a perfectly unbiassed pathologist, hence his report will be looked forward to with great interest. All I ask you is to assist me in obtaining material for investigation. I do not think that the left recurrent thrown out of use for several years will be likely to prove of any great use in this experiment. I wish, if possible, to get hold of horses which have turned roarers recently. I think they offer the most favourable cases for a solution of the problem. I am greatly in need of material, and this it is which has induced me to make to you what may appear to be a very premature announcement.

Professor MACQUEEN: With your permission, I should like to remark on the particular question which Professor Smith has brought under our notice, that I think it would be a mistake if we did not now recognise that another member of our profession has conducted, and is conducting, similar experiments. Sometimes there is a difficulty in deciding claims of priority in regard to such investigations. Hence I wish to say that Dr. McDonald has recently performed a similar experiment, and that the case is now on its trial. I merely make this announcement so that there may be some knowledge of the number of workers in the field.

Mr. GOODALL: Perhaps Professor Smith will state where the cases are to be sent to.

Professor SMITH: I shall be very glad to come to any suitable case of which I am informed.

Votes of Thanks.

Mr. ROWE: I have very great pleasure in proposing a vote of thanks to Professor Macqueen for the highly interesting discussion he has afforded us, by his very valuable address.

Captain RAYMOND: I have great pleasure in seconding the motion.

The resolution was passed unanimously.

Captain RAYMOND: I think, sir, we ought to accord a vote of thanks to Professor Smith for his communieation about roaring. I have had some experience of roaring myself, and I am sure we are glad to find that Professor Smith is engaged in so important an investigation. I must congratulate him upon the fact that he has no roarer of his own to operate upon. At Woolwich there are a good many roarers, and if we can only have the opportunity we shall be glad to send him some.

Professor SHAVE, in seconding the motion, suggested that they also owed thanks to Mr. Goodall, whose paper had evoked a useful discussion.

The motion, amended by including thanks to Mr. Goodall, was then adopted *nem. con.*

THE usual monthly meeting of this society was held on the 6th April, at the Royal College of Veterinary Surgeons, Mr. W. Roots, the President, occupying the chair. The other Fellows present were: Messrs. Hy. Edgar, A. E. Gostling, G. C. Lowe, Prof. J. Macqueen, F. C. Mahon, Prof. Pritchard, A. Prudames, Prof. Penberthy, W. Roots, J. Rowe, H. G. Rogers, Prof. E. Shave, W. Stapley. F. W. Wragg. Visitor, F. B. Lowe.

Post-Mortem Specimens.

Mr. J. ROWE, in submitting for inspection a *post-mortem* specimen from a dog, said that the case presented circumstances of unusual pathological interest, which were unique as far as his experience extended. A fox-terrier puppy was brought to him on the 26th ult., suffering, to all appearance, from bronchitis. It was taken away the same day by the owner but brought back to him three days later. Then it was left with him and remained in his office two days, after which he sent it to the infirmary close by. The dog died on the 4th inst. When it came back to him and up to the time of its death it was the most perfect example of a roarer he had ever come across. The owner was extremely surprised at the death of the dog. He (Mr. Rowe) made a *post-mortem* examination and found pus in the trachea and uvula; and lying here (place indicated in exhibit) in the body of it was an ulcer as though it had been perforated by some mechanical agent, and slight pressure would give exit to the pus. The noise the dog made was something extraordinary, and yet the animal ate and drank well to the date of his death. The cause of his death was suffocation and pneumonia. An hour and a-half subsequent to the death of this dog, a choked Manchester terrier was submitted to him. Now in all his experience—and he had had a little—he knew of nothing so difficult as unchoking a dog or a cat. In this case there was a piece of bone nearly an inch-and-a-quarter long which had lodged transversely at the base of the tongue, almost in precisely the same position as where, in the dog first mentioned, he discovered the ulcer. The dog was perfectly good-tempered, but he had great difficulty in using the ordinary forceps because of their inadequate length by about an inch-and-a-half. However, with the curved unchoking plyers which he produced, he was able, notwithstanding that he was suffering from a bite in his thumb at the time—to remove the obstruction. They would notice that both ends of the bone extracted, and which he exhibited, were jagged and very sharp.

Mr. HENRY EDGAR, in submitting a pathological specimen, said he thought that the case was rather interesting. It occurred in a sow between six and seven months old. He had not had his attention particularly drawn to the animal until its death on the previous Saturday evening, but he learnt from the lad who looked after the sow that she had not eaten quite as well as she ought to have done for several months: but when she died she was in very good condition. She was one of ten farrow. The others were fatted and killed about the second week in February and not one of them showed the slightest trace of any deposit in any of the organs whatever; but the mother he sold five or six weeks ago because she got so thin and was doing so badly. In the present instance his belief was that the case was one of tuberculosis, but he desired to draw their particular attention to the length and character of the spleen. The lungs were completely choked with deposit. The pleura was very much involved with deposit. The deposit was all over the pleura which was attached to the ribs, and there were also deposits in the omentum major; but, as far as he could see, there were no deposits in the peritoneum, although there was extensive peritonitis, with from two to three pints of fluid in the abdominal cavity. The liver was pale, anæmic, very soft, and could easily be broken down, but he could not detect any tumours.

Professor SHAVE: I would ask Mr. Rowe what objection he has to giving dogs ether when they are choked, in order to avoid all this manœuvring with the fingers. It seems to me that it is quite easy to give a dog an anæsthetic, and then you can do what you like to his throat. Has Mr. Rowe any objection to administering an anæsthetic, and if so, what?

Mr. ROWE replied that he objected to the administration of anæsthetics because of the danger thus incurred. Moreover, he was ambidextrous, and

could do what was requisite in cases of choking more readily and effectually without anæsthetics.

The SECRETARY: I may say that, with regard to giving chloroform to dogs, I am inclined to agree with Mr. Rowe as to the danger of the practice. I have lost two or three dogs in this way, and I think there is considerable risk. Much may depend upon the method of the administration. I chloroformed a dog in order to remove a small tumour, and he was dead within two or three minutes. The dog struggled a good deal whilst the anæsthetic was being administered, and I must say the results with me have not been very satisfactory.

Prof. SHAVE reminded the Fellows that his allusion was to ether.

Mr. ROWE: I gave hydrate of chloral to a dog to induce sleep, and I had to knock it about the head to revive it. The owner, who was waiting for the dog, thought it had been badly treated.

Prof. SHAVE: How much chloral should be given to a dog of—say 30 or 40 lbs. weight—to produce anæsthesia?

Mr. ROWE: I should say enough to fill a teaspoon, with an equal quantity of warm water added to it.

Prof. SHAVE: I have given dogs a very considerable quantity of chloral—as much as half an ounce, and it has not had the desired effect.

Mr. F. W. WRAGG: I have tried to poison a dog with chloral, but I could neither kill him nor produce anæsthesia.

Prof. SHAVE: I have tried to poison a dog with an ounce and a-half of chloral, and yet the dog did not die.

Mr. EDGAR said that hydrate of chloral produced a hot, burning sensation, and was likely to make a dog very irritable. He had used chloroform in many dog cases, and had helped to administer it in many ways, and as far as he could remember, the result was only fatal in one instance. He should like to know the experience of others who had used it, and whether it was less risky and better than chloroform. With regard to Mr. Rowe's specimen, he asked whether any foreign body might have produced the condition seen.

Mr. ROWE: If so, I never found the foreign body. It may have been punctured with a needle.

Prof. SHAVE: I would ask Mr. Rowe if he has any objection to performing tracheotomy in these cases. Death would not then have resulted from asphyxia.

Mr. ROWE: But the dog might have died from an ulcerated sore throat. I have no objection. I hardly thought it worth while. The dog could eat and drink and swallow well. It died in no great agony.

Prof. SHAVE: From asphyxia.

Mr. EDGAR asked if the lungs were congested?

Mr. ROWE: Yes, and the heart was unduly large. It was only a puppy. I have never seen anything like it in any *post-mortem* examination that I have made, and I have made many.

Election of a Fellow.

After a ballot, Professor McFadyean, M.B., B.Sc., F.R.S.E., was declared unanimously elected a Fellow of the Society.

Mr. EDGAR then read a paper on

"SOME OF THE PRINCIPAL DISEASES AFFECTING THE DIGESTIVE ORGANS OF THE OX."

as follows:—

When I was asked by our Secretary to write a paper, I felt somewhat diffident in undertaking the task, owing to the difficulty in selecting a subject, but feeling as I do that it is the duty of every fellow to help forward the interests of the Society in particular and the profession in general in any and

every way that lies in his power, I consented. I have chosen "The Digestive Organs of the Ox and some of their principal Diseases" as my theme for opening a discussion that may be useful and instructive. I trust that those of you who do not take a special interest in bovine pathology will bear with me and consider that it is not a very easy matter to select a subject that is at once interesting and at the same time a little out of the general lines of our monthly discussions. I have had a very considerable and varied experience of these diseases, so shall give you notes of cases that I have seen, and not rely entirely on others' experience.

I hold that the diseases affecting the digestive organs of cattle are of the very greatest importance from at least three aspects. 1st. From public health point of view. When these organs become affected they directly involve the mammary glands, and hence considerably diminish the secretion of milk and affect the supply, and when we consider that London alone consumes upwards of 42,000,000 gallons yearly, anything that seriously interferes with the quality and quantity of one of our staple foods must be of the very first importance.

Then again, from an economic point. When a cow loses two or more quarters her value as a milk producer is very much reduced; hence loss directly to her owner, indirectly to the country, for it takes 84,000 cows to produce the milk for London, 10,000 of which are still kept within the metropolitan area.

From a professional point it is of importance, for if we are able successfully to cope with these various diseases and thus prevent loss to the owners, they are more ready and willing to call in our aid. Also scientifically, it is of importance. If, as I have tried to show, the subject is of such considerable importance, why is it there is such apparent apathy amongst so many members of our profession, and so few really practical text books? I was very much disgusted when I was at College to hear our professor tell us that about the only therapeutical agent a veterinary surgeon requires for the treatment of the diseases affecting the digestive organs of cattle is sulphate of magnesia. When such statements are made it is scarcely to be wondered that the students do not attach sufficient importance to or take an interest in this branch of their studies. I shall endeavour to show that each individual case requires treatment on its own merits, which are as varied and important as those of horses. The time is past when the butcher's knife was the sovereign remedy for many cases which, with care in diagnosis of the symptoms and a knowledge of the various therapeutical agents at our disposal, might easily and speedily be combated, and a vast amount saved to our clients and the country at large, for it is many of those so-called simple cases that play such havoc amongst our dairy stock. Perhaps one reason why there are so few really useful works written on the subject is, because those who are most competent to do it from experience have but little time at their disposal, and probably receive little encouragement to undertake the task.

We need to consider the class of animals we have to deal with, the conditions under which they are placed, and the sort and quality of food given, because all of these influence the diseases to which they are subject. I am aware that the London veterinary surgeon has almost exclusively to deal with stall-fed animals, and consequently does not meet with many of the cases that a country practitioner does; but I shall endeavour to point out these as well as the others, and I shall rely upon those gentlemen who have had more experience in this direction than myself to correct me if I am wrong, and help me where my knowledge is deficient, so that the paper and discussion may be of real practical benefit to all concerned.

The veterinary surgeon can render most important service to the breeder in the prevention of many diseases, and he must ever remember the great influence which the digestive organs have on the system generally, and upon the organs of reproduction especially.

We shall find that dieting plays a most important part in the success of the treatment of, as well as in the prevention of, disease, and I am convinced that sufficient force is not given to this in very many instances. As an illustration of this influence, when we undertake the treatment of cows during parturition we mainly attack the digestive organs, and endeavour to get the stomachs and bowels in a normally relaxed condition, so as to assist nature to accomplish her task and not to thwart her.

Again, when animals are first tied up for fattening purposes, unless great care is taken, the digestive organs are overtaxed, a severe case of plenalvia is the result and much valuable time is lost. I have found that cattle fatten much quicker and with less risk when they receive a few good doses of purgative medicine for the first fortnight after they are tied up; I believe, too, that stall-fed cattle are often kept too short of water and so impaction is induced. An animal may thus lose two, three, or four stone in a few days, entailing a considerable loss on the owner, for it will take several weeks to make up the loss after recovery.

By far the most important class of animals are those kept for dairy purposes, and it is these that the veterinary surgeon has mostly to deal with, for inasmuch as the whole system of the animal is kept at a high state of tension, the slightest ordinary attack of indigestion becomes much aggravated, and the animal soon ceases to yield her quantity of milk. We must remember that generally (especially in London) dairy cows are tied up for months at a time, never getting any exercise, often an insufficiency of fresh air, whilst they are fed on the richest and most forcing foods. I may here mention that I have had many opportunities lately of noticing how very much climatic changes affect the yield of milk in a herd of cows, whether from hot to cold or from cold to hot. I have proved that settled weather is the most favourable for getting the maximum quantity of milk from a cow. Although I do not for one moment say that each class of animal I have mentioned is not liable to be attacked by any or all of the diseases affecting the digestive organs, I do say that the most serious effects produced from this cause are mainly, if not entirely, confined to dairy animals.

In this paper I propose only to deal with some of the principal diseases to which the alimentary tract is liable, otherwise my essay would be of such length that I am afraid most of you would vote both paper and reader a bore.

We are not much troubled with diseases of the teeth of the ox. The dental pad is sometimes liable to wounds or ulcerated sores due either to injuries or some eruptive disease as foot-and-mouth. The tongue is more frequently the seat of disease; it may become badly ulcerated and denuded of its horny membrane, leaving the corium exposed, as is generally the case in foot-and-mouth disease in the secondary stages. I had a case which at first simply presented symptoms of indigestion, pulse quiet and normal, no rise of temperature, appetite indifferent, sometimes would take a little soaked food, but principally a little hay; bowels fairly regular, milk secretion considerably reduced, no saliva dropping from mouth, nor was there shirking of food. For two or three days no suspicion of the real cause, then the mouth became sore, and on being carefully examined two ulcerated wounds were found, one on each side of the tongue, about two or three inches long. These would not yield to any treatment which was carried out for some time; there was nothing about the teeth to account for the state of the tongue, and in all probability it was due to actinomycosis. Unfortunately, I could not examine the tongue after the death of the animal, as I did not know when she was killed.

Actinomycosis, another disease principally affecting the tongue, has been so fully and ably described by many who have had much larger experience of it than myself, that I shall pass it over.

I do not even remember to have met with a pharyngeal polypus, but a former pupil reported a case to me which he successfully extirpated through the mouth, and the animal made a good recovery.

Before leaving the head, I should like to mention a class of cases which I will call, for want of a better name, "malignant catarrh," due, I feel fully convinced, primarily to indigestion. Probably many of you will disagree with me, but it has been my good fortune to meet with several of these somewhat rare cases, which has confirmed my opinion.

Case I. August 1st, 1882, called to see an aged cross-bred shorthorn cow at a dairy where there were 50 or 60 cows kept. The animal was noticed slightly unwell on evening of 31st July. Pulse quick, temperature sub-normal, slight discharge from nostrils of a watery character; skin very cold, coat staring; rigors; cow looking very miserable, mucous membrane of nostrils very much congested, of a bluish colour, and several ulcers extending as high up as one could see; the animal would only pick a little hay and mash, rumination suspended; one quarter was also beginning to swell, and the milk was not good, very little milk from other quarters.

2nd. General symptoms much relieved and cow much better.

3rd. Mucous membrane still improving and almost all the ulcers had practically healed. The animal continued to progress favourably and was discharged in about 10 days.

Case II. May, 1889, an exactly similar case at same dairy in a cross-bred aged cow. The ulcers in mucous membrane of nostrils were more numerous, slight discharge of thin watery character; suspension of milk, but no quarters were affected until the 2nd day, when one became swollen and milk affected. This case made a very rapid recovery and was discharged in six days.

Case III. 18th June, 1891, a similar case at same dairy, in a cross-bred long-horned cow. When I first saw her she was in a fearful state, could hardly stand, head protruded, coat staring, skin very cold; pulse 84, temperature 105°, udder intensely swollen, mammitis in all quarters, the near hind-quarter being the worst; prostration was very great, complete anorexia and suspension of rumination; mucous membrane of nostrils intensely congested, almost black and studded with ulcers varying in size from a threepenny piece to a sixpence, in fact the whole of it as far as one could see was one mass of ulcers, there was a moderate discharge of a sticky character. The case looked exactly like an acute case of glanders in a horse. There was black fœtid diarrhœa. The animal was kept alive for about a fortnight with gruel and brandy, and ale. The ulceration of mucous membrane healed in about ten or twelve days. The udder continued to swell very much, and broke on July 1st when a large slough was removed, and again a whole quarter came away on July 6th leaving a tremendous wound, which however healed well and the cow recovered. For three weeks the cow was very weak, and some days could hardly get up at all. I saw the animal some few months afterwards and she had put on flesh rapidly and was almost fit for butcher. My cases were all treated with diffusible stimulants, ant-acids, and antiseptics in early stages, and with tonics in latter stages, with local treatment for ulcers and udder.

My brother gives me the following notes of a similar case at same dairy.

December 13th, 1892, Hereford cow which had calved a month, giving during that time 17 quarts of milk a day. When seen on 13th, secretion of milk almost suspended, udder intensely swollen, especially near hind-quarters. The animal was very dejected, showed great lassitude, refused all food, cessation of rumination, mucous membrane of nostrils congested, bowels constipated, pulse imperceptible, temperature sub-normal.

14th. Mammary symptoms less acute, ulceration of mucous membrane of nostrils, profuse nasal catarrh, cough (the cow is probably tubercular), fœtid

diarrhœa, due partly probably to the large quantity of some red drenches (whatever they may be) that had been given. The cow's breath very fœtid.

15th. Diarrhœa continues, great prostration, well marked ulceration of nostrils.

16th. Diarrhœa continues.

17th. Still very prostrate, pulse imperceptible, temp. 102°.

18th. Cow looking better, pulse 70, temp. 100 dgs. Less fœtor of breath; she took a little hay for first time since her illness began. Mammary symptoms nearly subsided, the teats, however, are badly chapped; pulse still weak. 19th. About the same.

20th. Temp. 100·8 dgs., nasal discharge still profuse.

21st. About the same.

23rd. Feeding better, ulcers healing.

26th. Still improving, bowels normal, very weak.

January 4th, 1893. Cow doing well, catarrh ceased, also fœtor.

10th. Gives more milk and is gaining flesh, pulse 60, temp 101·5 dgs. On the teats are circular shabby patches, the largest as big as a sixpence.

January 18th. Cow doing well, milk has returned in three quarters, but the near hind is lost.

Case IV. On the 6th November, 1891, I was called to a gentleman's farm to see an Alderney cow which was noticed to be unwell that morning, having been apparently all right the previous night, and giving her usual quantity of milk. I found her temp. was 102 dgs., pulse 72, small and feeble, horns very hot, mucous membrane of nostrils intensely congested, parts of a bluish-black colour, very much swollen, the orifices almost closed, so that breathing was difficult, and accompanied with a grunt; the right nostril was the worst of the two; from it there was a profuse discharge of a thin character, with small flocculi of a deep yellow colour; nose alternately dry and moist, and very tender; skin over whole of body very cold, coat staring; intermittent rigors, eyes dull, sunken, and discharging slightly, udder intensely cold and very much contracted, entire suspension of milk, appetite and rumination; bowels acting fairly well, fæces black. I had great difficulty in making the cow get up.

7th. Temp. 100·2 dgs.; pulse 60. No discharge from eyes or nostrils, mucous membrane considerably relieved, much less swollen and congested; skin warmer, horns cooler, no rigors; had given a pint of milk on evening of 6th and morning of 7th; eating a few carrots and cabbage leaves.

8th. Temp. 101·6 dgs., pulse 60. Cow much better, eating hay, mash, etc., giving more milk, udder nearly natural size, ruminating well.

9th. Cow apparently as well as ever, discharged on 13th. This case was treated with ant-acids and diffusible stimulants.

My brother also gives me the notes of another case he had on January 18th, 1893, and which he intends publishing in *The Record*; so I will not trouble you with particulars, but only state that this case was very similar, excepting that the temp. was 103·7 when first seen instead of sub-normal.

It will be noticed that in most of the cases I have detailed, the temp. was 2 to 3 below normal, and at no stage was there any fever. It is also worthy of notice that the udder is sometimes primarily and sometimes secondarily affected, but always implicated. All the foregoing cases occurred in milch cows; I have never seen a case in either a bull, steer, or heifer. The questions to be answered are—what is the disease—and what are the causes? In my opinion they are primarily due to a form of dyspepsia.

The diseases affecting the œsophagus are chiefly due to injuries; I have never seen a case in the ox of dilatation and stricture apart from the presence of or the result of a foreign body. Our most frequent difficulty in connection with this organ is choking. I do not agree with Steel where he states in his

"Pathology of the Ox" that the symptoms arising from this are not so urgent in cattle as in the horse. I have seen many cases in both classes of animals and by far the most urgent and serious have been in the ox. Choking usually occurs in either the upper or lower third of the œsophagus. The first position is most serious and urgent because it interferes with the respiration, more quickly produces tympany, and the distance for the foreign body to be moved before it reaches the rumen and risk of injury greater. The symptoms of choking I need not trouble you with. When we are called to a case of supposed choking let us be most particular to inquire what the animal has been feeding on, whether potatoes, roots—hand-chopped are most dangerous —or trimmings of broccoli stalks, because this will guide us as to our mode of procedure. We should try and reach the obstruction with the hand if possible, if not, *before* manipulating give a small quantity of linseed oil delivered into the mouth with a horn and the head allowed to go free. Never use pressure or rough rubbing for fear of injuring the mucous membrane, which may easily be done, and our chance of success then becomes remote. The oil will greatly assist the passing of the foreign body when the probang is used, which should be done with care and with only gentle pressure. Take care that the probang when passed goes well into the rumen to be certain of the complete removal of the obstruction, and then remove the stiletto quickly to allow the gas to escape. It is sometimes necessary to pass the probang a second time. The after-diet should consist only of mashes for a day or so, for fear of a recurrence. One of the worst cases I ever had was in a very large shorthorn cow and due to a rough piece of broccoli stalk. I gave repeated doses of linseed oil and proceeded with great caution with the probang, and successfully passed it on into the rumen.

I have seen several cases of ruptured œsophagus where the attendants have used sticks or ropes before seeking advice, but only remember two cases where it occurred to myself, in both of which it was due to a large piece of sharp-edged wurtzel and had been present some time. The œsophagus ruptured with the slightest pressure. I do not think in either case anything had been passed, but do not know if pressure had been used; they were both situated in the upper third. When rupture occurs the case is hopeless, as infiltration of air or gas under the skin rapidly takes place. The animal should be slaughtered as quickly as possible.

We do not get five per cent. of the cases of choking since the finger and slicing machines came into general use that we did previously. Some years ago I had a case of paralysis in an aged cow; her breathing was very quick and the pain was intense, but no tympany. I told the owner, who was a poor woman, that I suspected a wire through the stomach, and she decided to have the animal killed. When examined after death three or four needles were found sticking across the œsophagus just at the commencement of the æsophageal groove.

I should be glad to know if anyone present has ever used Professor Simmond's forceps probang, or Lord's screw probang, and with what result?

Vomition is not very common in the ox excepting in cases of sea-sickness. Sometimes you may get a small quantity of food coughed up in tympanitis. The first case I remember seeing was many years ago, in a cow. We were sent for in a hurry as the cow had vomited three or four times a considerable quantity of partly masticated food; she had some medicine given and it did not recur.

The following particulars of a case my brother had in September, 1880, are interesting. He was called to see a young cow on 29th September, which had vomited a large quantity of food. She had not been doing so well as her fellows: the rumen was rather full of food, pulse, temp. and resp. normal: mucous membrane somewhat pale. He advised that she might be kept with-

out food for five or six hours, and no coarse food to be given for a few days. She did not vomit again until October 5th, when she threw up three or four gallons of ingesta ; there was plenalvia without tympany, pulse quick and weak, temp. and resp. normal, lactation diminished slightly, had not been noticed to ruminate, fæces firm, urine normal, administered a purgative and ordered soft relaxing food in small quantities (oatmeal).

6th. No more vomiting; ruminating, fæces fairly fluid, pulse 60, weak; temp. and resp. normal. (Stimulant Hanst.) 8th about the same. 12th about the same. Stry.

15th. Had vomited once since last visit. Appetite good, pulse weak; ordered dry bran, oatmeal, hay chaff, and 7 lbs. linseed cake per day. Tonics.

Oct. 21st. Cow had improved in condition, vomited once since 15th. Continued diet and medicine.

Nov. 4th. Vomited some food on 2nd. Pulse stronger and general conditions better. Treatment continuing; the tonic medicine continued until the 10th.

Nov. 30th. Cow eating and ruminating well, pulse normal, no vomition since 2nd ; cake had been continued with a liberal allowance of other food; much flesh gained. In loose box the whole time.

In the absence of direct evidence of œsophagopathy or gastropathy my brother attributed the cause to dyspepsia associated with atony of the œsophagus.

We will next consider the stomachs, and I think we shall find that most of our cases occur in counection with these, perhaps more particularly in connection with dairy stock. It is well for us to remember the enormous bulk of these organs in the ox. The rumen alone occupies three-fourths of the abdominal cavity, being situated on the left sides, the whole of which it occupies excepting the extreme posterior part. It is capable of holding from 150 to 200 lbs. of food after 24 hours' fasting. This stomach is divided into four compartments, the left being the largest—its muscular walls are proportionately weak, the fibres being largely composed of the pale unstriated variety, and their contraction is slow and prolonged. It is important to remember this when the mechanism of returning the cud for remastication is taken into account. The lining mucous membrane presents few glands and those simply of the mucous type, it has tessilated stratified epithelium and is elevated to form leaf-like papillæ which are largest at the depths of the pouches and disappear towards the muscular bands. The rumen receives all the mass of partly masticated food when first swallowed, also, with the reticulum, the bulk of water; a small quantity of liquid may pass directly into the third and fourth stomachs, which is probably also the case with mucilaginous drinks, such as gruel and linseed tea.

The second stomach, the reticulum, is the smallest of the four, and hangs below the termination of the œsophagus, between the diaphragm and rumen, it is attached above by the œsophagus to the diaphragm, connected with the narrow part of the rumen, and attached below also to the diaphragm. Its cavity communicates freely with the rumen by a large opening, in fact seems practically another compartment of that organ. The reticulum or honeycomb, takes its name from the peculiar arrangement of the mucous membrane, which lines it in small cells or cavities not communicating with each other, but opening freely into the general cavity. The muscular walls are, comparatively speaking, strong, and under stimulation of the pneumogastric nerve it has been found to decrease one-third in volume ; the œsophagus communicates more directly with this than with the rumen, its opening into the reticulum having somewhat the shape of a funnel. Meade Smith considers its special function to be to retain fluids, as its contents are always liquid.

During health there is a constant churning process going on from the rumen to the reticulum, so that when fresh food is taken into these stomachs it is thoroughly mixed with that already there, the whole of which undergoes a thorough softening and breaking down to prepare it for remastication. The starch of the food taken is here converted into sugar by the saliva and other fluids swallowed. The changes of food are probably, says Smith, of a fermentative nature, as indicated by the nature of gases which are constantly present. This CO_2, H_2S, acetic acid, butyric acid, carbonate of ammonium, chlorides, carbonates, sulphates and phosphates of sodium and potassium, and carbonates and phosphates of lime are almost constantly present.

As the remastication of the food is of the utmost importance in all cases of disease, we may here consider how the return of the cud to the mouth takes place. There seems to be a considerable diversity of opinion; all authors, however, agree in dividing the organs of rumination into the essential organs—the stomachs, and the auxiliary organs—the diaphragm and abdominal muscles. It is not perfectly clear from which compartment the food enters the œsophagus to be ruminated. Colin, Chauveau, and others believe that it passes directly from the rumen, while Haubner thinks the assistance of the water bag is essential, which Smith agrees is probable on anatomical grounds. Colin has found that the lips of the æsophageal gutter are not essential to the formation of the cud; so, also, Flourens has proved that the reticulum is not solely concerned in the operation, for he excised a portion of this stomach in a sheep, and yet rumination was possible. That the œsophageal pillars are not essential to the formation of the cud is proved by comparative anatomy, for we find rumination occurring in the llama and dromedary, where only a single pillar is present. The contents of the first two stomachs, as already mentioned, are subjected to a gentle churning motion, and the tendency of the food is to strike forward against the pillars of the œsophagus. As it presses forward by its own weight, and the slight degree of impulse which the contractions of the rumen and reticulum give to it, there is a contraction of the diaphragm and of the abdominal muscles, and this causes a portion of the contents of these two compartments to engage in the infundibular orifice of the gullet, whence they are carried upwards by reversed peristalsis. Flourens has proved that the diaphragm and abdominal muscles are necessary to permit of rumination, for when the diaphragm is paralysed the abdominal muscles will be called upon to make an extra effort, when these latter are paralysed by section of spinal cord rumination is impossible—this is also the case when the pneumogastric nerves are divided, Notwithstanding all that has been shown by these experiments, I think we may safely conclude that, however possible it may be for rumination to be carried on temporarily without the aid of one or other of the organs mentioned, all are absolutely necessary for effectively carrying on this important function of remastication,

There is, however, one important point that we want to bear in mind in connection with rumination, that is, the enormous quantity of fluid that is necessary. It has been proved that dry food such as fodder absorbs in mastication and in the rumen four times its own weight of fluid, and as the reticulum has been proved to be the principal stomach for containing fluid, its part played in the function of rumination can be readily imagined. Another important point, is the time necessary for the proper remastication of the foods. It is calculated that it requires 520 rejections in order to permit of all the food taken being remasticated, (this is admitting one-seventh of the food is not remasticated) and each bolus requires 50 seconds. It thus requires at least seven hours for the process of rumination. This is important as bearing upon the number of times an ox should be fed per day, and the necessary periods of rest.

(*To be continued.*)

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

(Continued from page 362.)

There is one region of the body in which this question of dry wounds is of paramount importance—it is in the abdominal cavity. Here from the beginning of the operation to the end, the surgeon's attention must be constantly directed to the stopping of all bleeding at once. When the incision in the abdominal wall has been made, and before the peritoneum has been opened, the bleeding vessels should be clamped with Well's forceps, and when the cavity has been opened the same precaution should be observed. Once blood has escaped into the cavity and finds its way amongst the coils of intestine, it is most difficult by sponging or washing to thoroughly remove it, and its presence in the cavity, if it is left, forms one of the great dangers of abdominal surgery. It is not the mere presence of blood which does harm, but rather that it acts as the nidus in which the growth of germs can take place luxuriantly.

In operations which involve the opening of the air passages, the absolute prevention of blood from entering the trachea is equally great. Blood finding its way into the alveoli of the lungs is constantly the starting-point of pneumonia, especially of that septic type which is so extremely fatal. This is one of the great dangers of operations involving the tongue or mouth cavity. So much is this the case that where the bleeding is difficult to control, as in operations for the removal of tumours from the larynx, or sometimes for the removal of the whole tongue, a preliminary tracheotomy is done, and the trachea plugged with a tube around which a tampon of sponge is secured to completely plug the trachea, the passage of blood in the parts below being thus absolutely prevented. Another important detail to be attended to is that the wound cavity shall be reduced to the smallest possible size by the use of sutures. This includes not only the use of sutures to the external incision, but also the use of deep sutures where they can be applied. For instance, in amputations of the limbs I cut the muscles of the flaps longer than is absolutely necessary to obtain closure of the surface incision, and so long as to enable me to stitch the divided muscles over the bone end, the sutures being buried in the tissues and left to be absorbed. By this means the cavity of the wound is practically abolished, and everything lies snugly in apposition.

After the wound has been closed and the dressing applied, other important needs are attended to. Absolute rest is secured by the application of retentive apparatus, such as splints where this is possible, by slings or by recumbency; or if the part is an organ of special sense, as for instance the eye, its function is abolished for the time by excluding its stimulant light. Just a word as to the value of splinting in procuring rest in awkward parts of the body, as in the neck, where the direct pressure of a splint to the wound area is not feasible. I often find the greatest possible advantage after extensive operations on the neck for tubercular glands, in the application of a splint to the opposite side of the neck and head, the splint being made of material such as gutta-percha, which can be moulded to the part. The neck is for the time made a rigid column, instead of the constantly mobile structure which it commonly is.

As great as the need for rest, is that of suitable position for the wounded part. The great principle to be observed is the promotion of the return of the lymph and blood stream by the position the part is placed in. The old adage "water won't run up hill" applies to wounded parts with unusual emphasis. The blood in an inflamed area tends to linger in the over-distended vessels,

and everything possible should be done to place the wound on a higher level than the tissues with which it is continuous. Who is there who has had experience of a whitlow and does not remember the intense throbbing in the finger and hand produced by lowering the hand out of a sling which was supporting it. At each pulsation of the heart the inflamed area seems to be bursting with blood. The same result is produced by the dependent position of any inflamed part.

Then we must not forget how important it is not to impede venous and lymphatic return by applying tight bandages or strapping to the part which lies above the wound, and the vessels which carry off the blood and exudation of the wound area. Firm and even compression of the site of the wound should be the rule, but the less there is above the wound the better. Most surgeons can call to mind examples of the harm done by the application of too tight a bandage or of a strip of strapping which has obstructed the free return of blood and lymph from a wound. The part becomes œdematous, the nutrition of the tissues is interfered with, and if any septic particles are present in the wound they find the circumstances favourable for them to work evil.

This again leads me to another point of importance, the absence of tension. Great tension in a wound is of itself sufficient to cause fever—sometimes to a considerable extent; but this is not its only drawback. Consider for a moment what the mechanical effect of tension is. It compresses the vessels in the inflamed area, vessels in which the circulation is already embarrassed, in which the current is slowed, and in which stasis and thrombosis may occur. If, in addition to these difficulties, the vessels are compressed by the tension of the tissues outside them, the nutrition of the wounded and inflamed parts is still further lowered, and every opportunity is afforded for the growth of micro-organisms which, despite our precautions, may have found their way into wounds. These evil doers, lying in healthy tissues the nutrition of which is well maintained, tend to die out; but where tension exists and nutrition is interfered with, then the resistence of the tissues is too low and germ-life thrives. Tension in wounds is due generally to oozing of blood or serum into the wound cavity, and for its relief exit must be given to these accumulations, either by liberating some of the sutures or by the introduction of drainage tubes, if this seems called for. It may be necessary when the parts around the wound are tense from inflammatory infiltration to make incisions to give relief from the interstitial pressure. Bearing upon this question of tension is the absence of all obstruction to lymphatic and venous return, to which I have already alluded at some length.

To sum up what I have placed before you; I would say that modern wound treatment is based upon the recognition of the germ theory of disease. All our efforts are directed to making wound *aseptic in the first instance*, by those minute attentions to cleanliness which I have described at length. Everything which comes in contact with the wound, such as instruments, ligatures, sponges, etc., must be so prepared that they cannot introduce infective particles; the skin around the wound must not be allowed from want of cleanliness to be the source of infection; the air of a reasonably healthy building does not do the harm with which it was at one time credited. If the conditions I have laid down are complied with, wounds are made aseptic, and *the less they are exposed to the use of so-called antiseptic lotions the better.* If, however, a wound, for instance, a compound fracture, has been exposed for some time before it comes under treatment, then the use of antiseptics is called for to destroy and neutralise as completely as possible any accidental contamination to which the wound may have been exposed from the clothing, the earth, or the weapon which produced the injury. Germ life not having been altogether excluded from wounds, I have endeavoured to show how its development may be prevented by attention to the general principles of wound treatment, rest,

absence of tension, dryness of the wound cavity, etc., which by many surgeons in the early days of the germ theory, appear to have been lost sight of for a time.

What do we hope to gain by all this labour—for it involves no small amount of work? We hope to practically abolish suppuration and septic diseases, erysipelas, tetanus, and acute infective spreading gangrene. We hope to reach a condition when surgeons will undertake operations with the power to assure their patients that they are safe from what the public calls blood-poisoning in all its forms. Other advantages also follow. Wounds in which suppuration is excluded are as a rule painless in healing, and the time during which the patient is incapacitated is reduced to a minimum; two very important facts. Further, apart from the risk which suppuration involves to the patient's life, it mars the complete success of some operations, such as the radical cure of hernia. We have, therefore, every incentive to do all that lies in our power to attain perfect asepsis, which alone can give us the safest, most rapid, and painless healing.

It may be, gentlemen, that the circumstances under which you work render the application of the details possible in human surgery quite impossible in your treatment. Nevertheless, the same fundamental principles are at the bottom of successful wound treatment, whether in man or brute. We have some advantages in the ability to control our patients more than you possibly can yours, but you have as a set-off, healthier subjects to deal with, free from the effects of alcohol and unwise living, and with greater reparative powers. Whether our practice and yours can be made to coincide or not, I have no doubt it is to the advantage of both professions to interchange ideas upon common topics such as I have introduced to your notice. The wise man said, "As iron sharpeneth iron, so sharpeneth every man his fellow." In this spirit I have ventured to trespass upon your attention to-day, and, recollecting the flood of light which has been thrown upon diseases incidental to man—tubercle, tetanus, and now upon cancer—by the study of animal pathology, I look hopefully forward to future advantage which we shall both gain by comparing our ideas and experiences.

The PRESIDENT said he should feel obliged if anyone who took an interest in the paper would put what questions he wished as soon as possible, because his brother had to leave in about twenty minutes. He was sure they all felt deeply indebted for the paper, which had been an instructive one, and which he hoped would be of service to the profession.

Mr. MALCOLM expressed his indebtedness to Mr. Barling for giving them such an admirable paper. They had had some very able papers at their meetings, but he did not think they ever had one that came more thoroughly home to them, and was of more practical importance to them as veterinarians. He felt sure that he was doing right when he wrote to their President, to ask him to try and induce his brother to come and speak before them, and he was extremely pleased that Mr. Barling acceded to the request. He had laid very forcibly before them the absolute necessity of great cleanliness in wounds, in fact, his paper seemed to be largely summed up in that. Mr. Barling had supplemented what was taught by Professor McFadyean and Professor Walley, that the bad results of wounds were largely attributable to germs. Mr. Barling had complimented that, and taught them how to get rid of the germs, aye better than how to get rid of them, how to prevent them. A large part of Mr. Barling's treatment was preventive; he disinfected the skin of his patients, and he disinfected the instruments in a way that he (Mr. Malcolm) thought they could scarcely adopt, but the further they could adopt it, the better would their case be. Abdominal surgery in human beings and in the lower animals, differed very greatly. It was most necessary to be careful in abdominal surgery when it affected human beings, but, in animals, many

operators used indifferent methods. He mentioned the impunity with which some members of the profession carried on the spaying of bitches, and said that by proper attention to antiseptic treatment they were able to a large extent to avoid such diseases as erysipelas, tetanus, gangrene; and everyone knew how important it was to prevent these diseases. He was glad that Mr. Barling had laid so much stress on the methods adopted by the late Mr. Gamgee. He had heard Mr. Gamgee speak of wound treatment before them, and he impressed them with the wonderful success of his methods. No one could read his book on wound treatment without being very much benefited. The late Mr. Gamgee was an honorary associate of their profession; he was also connected with the veterinary profession, he believed, even more directly than Mr. Barling, still Mr. Barling had a close connection with the veterinary profession, and he was sure it would be a considerable addition to the society if they could get him enrolled as an honorary associate. They had a good list already, and if they could add the name of Mr. Barling to it, they would do a good day's work, independently of having heard an admirable paper.

Mr. PARKER said he should like to second the proposition as to the election of Mr. Barling as an associate. Apropos of the paper on the treatment of wounds, he pointed out that veterinary surgeons were not so favourably situated with regard to the wounds of their patients. He should like to ask Mr. Barling what he considered the best thing to be done when a bandage could not be applied. He simply put carbolic oil on the wound. The great thing was to keep the wound as dry and as quiet as possible. Boracic acid had been mentioned, but he never saw it used but once. It had then been used upon a surgeon's horse. He (Mr. Parker) blistered the animal's leg, and it was well directly. The surgeon said, "I thought you were going to kill my horse, but I know the sense of your treatment now."

Mr. TRIGGER endorsed all that had fallen from Mr. Malcolm as to the value of the paper, which would rank with the high standard papers that they had had on previous occasions. He regretted that that was not a more representative meeting. The change in the day of meeting, he believed, accounted for the comparatively small attendance. He was sure many of the members who were unable to attend would be the first to regret their inability, when they heard of the admirable paper they had had—admirable because there was nothing in it that one could fail to understand. It appealed to the common sense of every practitioner who kept himself in touch with the present day, because everyone knew the simple treatment of wounds was the aseptic treatment. The were obliged to recognise it in cases where they were not able to carry out the scientific theories of the present day, and they were staggered to find the good results. Mr. Barling had laid great stress on the closing of wounds. He (Mr. Trigger) also attached great importance to it after the wounds had been properly cleansed. He could tell them, however, of cases of large gaping wounds which had been caused in collieries, and to which attention had not been called until the hope of closing them had passed. One might take control of the wound, and think it was no use closing it, and they treated it and the wound healed, and they got as small a scar and as perfect a cure as where wounds had been sutured. He could call to mind many cases of large flesh wounds, and the only trace left of them was where the stitches had been. He instanced a case of tetanus brought about in a mare through a nail having been picked up. The wound was treated in the ordinary way, and the mare made a complete recovery from the wound in the foot, apparently. After she had been at work two days he saw her by accident, and the moment the stable door was opened he noticed that she was suffering from tetanus. To get up the foot that had been treated was impossible. He sent for a couple of blacksmiths, but they could not get the foot up. He

decided not to act hastily and destroy the mare. The next day she was worse, and if not put in the slings she would have been down. She was accordingly put in the slings, but the wound in the foot was not touched. It was as bad a case of tetanus as he ever saw, and it made a complete recovery. The wound never had any application after the tetanus set in, and to use the owner's expression, which he doubted, "the mare was a better mare now than before." Veterinary surgeons could not help envying the medical profession for the large field which they had for surgery, and also for the better position in which they stood towards their patients. A surgeon was able to put his patient on his back, and not only to do that, but to keep him there for as long as he wished. That would be a great advantage to the veterinary surgeon, if he could avail himself of it. He looked upon slinging in the early stages of disease as being of great advantage. Another thing that had struck him in his practice, was that there was no place where a wound to an animal did so well as in a colliery. If he got a bad case of a wound to a horse in a pit he never had the animal brought to the surface. He had found wounds which would have been thonght hopeless anywhere else recover in the coal-pit. The reason, in his opinion, was the equable temperature. Everyone must endorse what Mr. Barling had said about sponges. He also agreed with Mr. Barling as to the necessity for disinfecting all instruments. With regard to boracic acid he did not agree with Mr. Parker. It was a valuable adjunct. Iodoform with boracic acid was one of the best dressings they could have. Carbolic acid he did not like at all.

Mr. SMITH was very much obliged to Mr. Barling for giving them such an interesting address, but at the same time there were certain things which he had mentioned which he (Mr. Smith) differed from. His conviction was that cleanliness and letting the air get to the wound was much better than closing it up. He would not stitch a wound unless to save the common integument. He had tried both ways, and he had found that by allowing the granulations to form a wound healed quicker. Soft soap had been mentioned, but there was nothing that made him more inclined to kick a man out of a stable than to hear that he had been using soft soap. It might be all right to use it upon human subjects where there was no hair, but they could trace more cracked heels to the stable where soft soap was used than to others.

Mr. MERRICK said that their thanks were due to Mr. Barling for his interesting paper. His remarks on the treatment of wounds were mostly in regard to operative surgery. In their practice they had to treat wounds that were made, and it was to their interest to keep them open, and that was why he thought some members differed from Mr. Barling as to the sewing up of wounds. Where the common integument only was affected it was their duty to save as much as they could by sutures. It was their duty to keep the surrounding parts of a wound as clean as they could, with as little water as possible, particularly in sutured wounds, because the wet rotted the stitches and predisposed the surrounding parts to disintegrate. He was rather pleased to hear what Mr. Trigger had said about tetanus. He spoke of the importance of healthy sanitary surroundings, and mentioned that on one farm four different animals were lost from tetanus after operations. The animals on this farm seemed predisposed to tetanus.

Mr. BLUNT said there were many different opinions with respect to the treatment of wounds. He had always found that a wound with a good healthy discharge did well, and the less it was sewn up the better. He understood Mr. Barling to say that he often left a wound covered up for days together, but if they left a wound upon a horse covered up for four or five days there would be a very bad smell.

Mr. OLVER expressed his sense of the honour done them by Mr. Barling. Few of them, he thought, could disagree with Mr. Barling's methods of treating

wounds, but there was no doubt that they, as veterinary surgeons, had very great difficulties to contend with, and they were not able to asepticise wounds to the same extent that Mr. Barling would. As to the remarks on abdominal surgery, he said they had to deal with animals in which there was a great deal of abdominal surgery, and they found that there were idiosyncrasies in species. Then came the question of dogs which Mr. Merrick had spoken of, but they knew that the treatment of wounds in dogs was unnecessary; the licking of the dog itself was sufficient. The question arises—was the saliva aseptic? These questions were very interesting. He had no doubt that in the abdominal treatment that Mr. Barling spoke of, if they could take up all the vessels it was a very distinct advantage; but veterinary surgeons, in cases they had to deal with, found it an impossibility. Interesting as it was to them to hear what was done in human surgery, it was impossible for the whole of it to be applied to animals. As to boracic acid he had found it very valuable indeed. At the present moment he was using it freely.

Mr. W. HUNTING regretted that he was not early enough to hear the first part of the paper. What he did hear led him to think that it was one of the most able expositions on the treatment of wounds that he had ever heard or read, but he had not gleaned from Mr. Barling exactly the same conclusions as the other speakers. He did not think that the paper showed that asepticism was everything in the treatment of wounds. He thought it went to prove that whilst they must not neglect asepticism, the minutest *details* of surgery were just as important now as they were in the days before germs were heard of. Of course he allowed that there *were* operations performed now which even Liston and other bye-gone giants could not do, or if they did he followed by a fatal termination. In Birmingham one could not keep going back to some years ago when Mr. Gamgee gave them an address in which he made a remark which should ever be remembered in surgery—that the greatest aseptic was vitality, and they should remember that the vitality of the tissues was as important as keeping out the germs. No doubt the safest thing was to keep out germs, but they could not always do this, and they must keep the wound in such a condition by all the little details of surgery as would be least favourable to septic complications. One point that marked a great distinction between the lower animals and man was the almost total absence of shock in the former. They could inflict tremendous injuries on the lower animals and there would be hardly any signs of shock. He had been told by an army surgeon that he had seen a 7-lb. round shot carry away nearly the whole of the molars of a horse, but the horse put its head down and tried to eat grass. This absence of shock ought to be an extremely valuable factor to them. Then they came to the impossibility of securing animals and keeping them from moving and interfering with their wounds, but the principles were the same in the man as the animal. Mr. Barling was referring to the stopping of hæmorrhage when he (Mr. Hunting) came into the room. Years ago he used to believe if one made a wound the sooner he got it closed the better. Two or three cases had occurred to him which showed that if they wanted healing in a wound after they had made it, and they could leave it a couple of hours, they would get adhesion quicker. He mentioned a case that occurred in Mr. Cartwright's practice at Wolverhampton, in which someone had drawn a knife across the ribs of a horse. The wound was 2 feet long and gaping to the extent of about 15 inches. It was dry and all bleeding had stopped. He brought the wound together with pins. The muscular wound did not correspond to the lines of the skin wound. He somehow forgot about the case for a day or two, but when he went again the pins had cut themselves out and the wound was perfectly healed. A number of wounds in veterinary practice occurred in places where few injurious germs were to be found. Gravity had been referred to in the paper. Horses stood on four legs, and when there

was anything wrong with them they would not lie down, and the swelling that resulted was a source of trouble. The best to do was to give exercise. So long as exercise could be given without tearing the wound open the exercise would facilitate the healing process. Compression above a wound was a thing which he was afraid veterinary surgeons did occasionally cause. They were apt to tie a bandage on as a ligature, and he believed that was the worst thing they could do. The remarks with reference to castration and spaying were extremely instructive. Amongst all the abominable dirt of a pig-stye one would think that all the pigs operated upon would die, but it was an unusual thing for any of them to die. Pigs to be spayed were generally kept without food from the evening before the operation, and that he looked upon as a very important matter. On the subject of castration he said that if they could not bring together the sides of the cavity from which the testicles had been removed, they could not do better than to make the opening as big as possible. Systematic asepticism was impossible in the castration of colts, and they must therefore adopt the least injurious methods. A free depending orifice to the wound, and decent surroundings to the animal were their safest methods.

Mr. MULVEY expressed his approval of the very valuable paper that Mr. Barling had given them. There was one remark that he should like to make. Speaking of the treatment of wounds in dogs, one gentleman had said that he believed the best way to treat them was to allow the dogs to lick them. He was opposed to that. If they kept the wounds dry and prevented licking, they would have a far better result. With regard to boracic acid, he was in favour of it, and had found it give exceedingly good results.

Mr. GILBERT BARLING, in replying to the questions, thanked those present very much for the kind way in which they had received his paper, and for the criticism passed upon it. He felt at the outset that he had a very difficult task to perform. He knew that the surgeon had some advantages that the veterinary surgeon could not obtain in the treatment of their wounds. For instance, if a horse got a compound fracture of the leg, they could not put him in bed. But despite the drawbacks which they suffered from, he thought the principles of wound treatment were practically the same, both cases, but whether the details were was another thing. He was very much struck by the case that Mr. Hunting mentioned, where he closed a wound some time after the injury was inflicted, and after all oozing had stopped. That was an excellent thing. He was able to close the wound and no further oozing took place —an altogether most desirable thing, and an application of the great principle of the dry treatment of wounds. One or two speakers had dwelt on the questions raised in abdominal surgery. No doubt the cessation of hæmorrhage before the abdomen ls opened, and the immediate closure of all vessels when it was opened were amongst the most important features of abdominal surgery of the human subject; the suturing up of the peritoneal cavity, so as to cut off all influence from the external world was the next. Although he insisted on the importance of these two details in human surgery, he was not in a position to say whether they were as important in animals. They might do to one animal's peritoneal cavity what they dared not do to another. They might find this in the human race—in some of the nigger races, for instance, he believed they were very bad subjects for certain kinds of surgery, but they were good for others. If a surgeon went to India he could crush for stone with impunity, but they dared not do that here. Mr. Parker had mentioned boracic acid and carbolic oil. Each had its place, and the mistake that a surgeon made who treated his own horse was that he did not know anything about the wound treatment of animals. On the question of tetanus, he was perfectly convinced that it was due to the presence of a specific germ; that that germ lived generally in the soil, and hence it was they saw it, he believed, after certain operations with some frequency. He should say that in an

animal operated on for castration or docking, where the wound surface was likely to come in contact with the ground, especially ground recently disturbed, such a wound was more likely than another to be infected with the germ of tetanus. That raised a question during the discussion whether tetanus in some cases would not be prevented, possibly by covering up a part like the scrotum, or a docked tail, by dressing which would keep it from exposure to contact with the ground, which he believed was the constant source of tetanus germ. As to the use of soft soap, he only used it for one purpose. After the shaving of the scalp, or crown, a little soft soap was used to scrub the part with, and it was carefully washed off. There was no doubt it made an enormous difference whether wounds were made by the surgeon or made by accident, and most wounds coming under veterinary care were accidental, and often complicated. Animals had so much reparative power that it would heal almost anything. They had not the same power in the human subject; the veterinary surgeon might leave a large wound, knowing it would granulate; he (Mr. Barling) knew that he should get something which might imperil life, and that marked one great difference between them. In ending his remarks he must thank them again for the very kind way in which they had received his paper.

At the conclusion of the discussion on Dr. Barling's paper the meeting proceeded to the transaction of the business of the annual meeting. Mr. Dawes read the letter from the Secretary of the National Association, referring to the Institute of Preventive Medicine, and suggesting united professional action with any funds they might subscribe.

Mr. MALCOLM said the Council of the N.V.A. met at Manchester the other day and they had before them the letter from the President of the proposed Institute of Preventive Medicine. The Council took exactly the same view that had been previously taken at the Central Veterinary Association in London, that they thought the veterinary representation on the Institute might be increased with some benefit. They entirely agreed with the objects of the Institute, and they thought that if the whole of the societies were to take the matter up and get the Royal College to mediate with the Institute, they might have a better representation on the Institute of Preventive Medicine than they had at the present time. The National Association did not wish for a moment that that society, or any other society, should sends its funds to the National Society. It was suggested that the societies could act through the Royal College, and the National Society only threw out the hint to the Midland Counties Association, or any other association, to do exactly as they thought fit; but the National thought that amalgamation would secure what singly or individually they might not obtain. Speaking as a member of the Midland Society, he felt sure that they must all agree with the objects of the Institute, and if it was to be a joint affair between medical men and veterinarians he, as a member of that society, would be prepared to support it. But however admirable the objects might be, if it were to be entirely a medical matter, if the work were to to be entirely in the hands of medical men—and if they did the work, of course they would get all the credit—then he thought they could devote their funds to better use, by employing veterinary surgeons to carry out their experimental work, and then whatever credit accrued would be theirs. They wanted everything they could to enhance their own profession, and unless they had a fair idea that this Institute of Preventive Medicine was to be worked in real collaboration with the veterinary surgeons, and that they could have an active part in it, then he failed to see how it would benefit them materially to support it. They would like to see some credit come to the veterinary surgeon for work done, not that they should simply subscribe for medical officers to carry out all the experiments and to get all the credit of it. If the latter were to be the case he should vote against any of their funds

going towards it, as he felt strongly that they should use their funds for investigations by their own men, and they had done some good already, and might confidently work forward to still better results in the future. They tried operations for blackleg, and they settled one matter—that they could not get the same results in this country that they claimed on the Continent. He thought they might hold their hand until they saw what line was meant to be taken up. If the Institute wished the veterinary profession to co-operate with them the latter ought to assist to the utmost of their power; but if they wished to carry on the matter themselves without the help of veterinarians, then the funds of the association ought to be devoted to another purpose.

Mr. BLAKEWAY: Has the Secretary received any official communication from the Institute of Preventive Medicine?

Mr. DAWES: No, not in my official position.

Mr. BLAKEWAY: Then I think we should not take any action until we hear from them.

Mr. DAWES: I believe they wrote to every other secretary. I received a circular privately, but not as secretary.

Mr. OLVER said he was in sympathy with what had been stated by Mr. Malcolm. He approved of the Institute as it stood, but he thought that as a profession they should be more fully recognised. They had the President of the Royal College of Veterinary Surgeons with them, and he, no doubt, could give them some information on the subject. He suggested that they should approve of the principle of handing over a sum of money to the Royal College, but that the matter should be put on the agenda at the next meeting to be considered. It could then be fully discussed. If necessary he would move a resolution to this effect.

Mr. MULVEY said it had been agreed that in the event of the associations subscribing, that they would add to that a sum to make it something worthy of the profession. They had also determined that they would first of all see that the veterinary profession was properly represented on the Council of that body before making any grant of its funds.

Mr. GOOCH seconded the motion that the subject be put on the agenda paper for the next meeting in May, and it was carried.

Mr. BLAKEWAY then read his report as treasurer.

Mr. HUBAND next moved that the treasurer's report should be received and adopted.

Mr. MALCOLM seconded the proposition, and it was carried.

Mr. PARKER proposed that Mr. T. H. Merrick be elected president for the ensuing year. He said they had had many good presidents, and he was sure that Mr. Merrick would make a good one. He was on the Council, and was highly thought of there. He did not think they could have a better man.

The PRESIDENT seconded the resolution, and said he was sure that Mr. Merrick would make an excellent president. He had been a regular attendant, and they all knew his good qualities.

The resolution was carried.

Mr. TRIGGER proposed Mr. Horton, of Warwick, as a vice-president.

Mr. STANLEY seconded the motion.

Mr. HORTON asked to be excused. He worked his practice, he said, single-handed, and he had more than he could do.

The resolution was agreed to.

Mr. STANLEY moved that Mr. J. Wiggins should also become a vice-president of the association.

Mr. BLUNT seconded this and it was passed.

Mr. MALCOLM proposed that their late treasurer, Mr. Blakeway, should be re-elected.

Mr. COE seconded this and it was passed.

Mr. MERRICK thanked them heartily for the high honour they had conferred upon him in electing him to be their President. When he thought of the good men who had held the post before, it was rather with trepidation that he looked forward to his year of office, but he would promise that they should have his best services, and he hoped at the end they would prove satisfactory. He thought it was the duty of the President-elect to choose the Secretary of the Association, and he was sure he would not be doing wrong in choosing their late Secretary, Mr. Dawes. With his assistance he was sure he should be able to better undertake the duties of President.

The PRESIDENT seconded the motion for the re-election of Mr. Dawes as secretary. Mr. Dawes gave the President as little trouble as possible, and he was an efficient secretary.

The resolution was carried.

Mr. BLAKEWAY returned thanks for his re-election, and remarked that he was looking forward to an easier year this year than last. They might have done better by choosing someone else, but he should be glad to continue to do his best.

Members of Council R.C.V.S.

The PRESIDENT said it was now for the meeting to decide whether the Association should be represented on the Council of the Royal College of Veterinary Surgeons.

Mr. MALCOLM thought it would be a very good solution of the question if the Society would decide to support those members whom they wished to stand as councillors. Two of their most respected members were Mr. Beddard and Mr. Wragg, and if one or both stood they would receive the unanimous support of the Society, and its influence with other societies should secure their return. They could not have better representatives, and he hoped they would both come forward, and that it would be the wish of the Society that they should be supported.

Mr. TRIGGER said for the last two or three years the Association had decided to adopt members and to run them as the nominees of the Midland Counties Association. There were pressing reasons, perhaps, why that should be done. The new charter was before them, and they were anxious to have representatives of their own. The urgency of that matter had passed. Under the old charter, Mr. Wragg and Mr. Beddard had become vice-presidents of the Royal College. Under the new charter the vice-presidents will be elected from the Council, and they would have to select an extra number of members of Council to fill up the vacancies. Therefore this year there would be an increase in the number of Council to be elected. If they found that the two gentlemen whose names had been mentioned were willing to stand and to contest the election, he asked the members to give them their cordial support. Mr. Beddard, since he became a member of the Council, had been an assiduous attendant, and had given the greatest care to their interests. Mr. Wragg held a prominent position, as he was treasurer, and as such he was fairly entitled to his seat. If they came forward and consented to be nominated, he asked their cordial support for them.

Mr. MALCOLM: I hope Mr. Beddard will accede to our request without demur. He is the right man in the right place, and I am sure it would be a great pity if we were to lose his services.

Mr. BEDDARD appreciated the honour that it had been proposed to confer upon him. There was only one reason why he should wish to decline it, and that was when he looked round the room, or thought over a few absentees, he knew that there were members who might be chosen who were far better able to represent them in the Council than he was. Until he had the honour of sitting on the Council he used to think that the work was light, and that

one only had to attend for an hour or two, and then to go into the City and enjoy oneself; but he had altered his opinion considerably. There was no doubt some hard, earnest, financial work to do, and if a man took an interest in the well-being of his profession he must be very regular in his attendance, and keep himself well versed in all that was going on. That all required time, and a man must devote a good deal of time if he was going to carry out the duties satisfactorily. Not only that, but it required a man of deep care, thought, and consideration to arrive at a conclusion, and a man that was able to give vent to his opinions and to maintain his views; and he was sure they would find men amongst their members far better able to do this than he was. Still he did not want to shirk any duty, because no man had more love for the profession, and the Midland Counties Association in particular, than he had. He asked them to re-consider his nomination. He was perfectly satisfied that they would be better able to find a man to represent them, and he would be very glad to give him his support.

Mr. OLVER: A man who can see so many virtues in other people and so few in himself is calculated to benefit the profession. Mr. Beddard had already done his work so satisfactorily. It is not necessary that all members of the Council should be brilliant speakers, you want brilliant thinkers, and I should be glad to propose that Mr. Beddard and Mr. Wragg be our representatives.

Mr. HUNTING said that Mr. Beddard was one of the most regular attendants on the Council, and one of the most earnest men. He was gifted with a large share of common sense, and he (the speaker) was sure no one was better fitted to represent them.

Mr. STANLEY: I shall be pleased to second Mr. Olver's proposition.

Mr. MERRICK: And I am sure we could not have a better representative.

The resolution was carried.

Mr. HUBAND then proposed a vote of thanks to Mr. Barling for the able way in which he had conducted the business of the Association during the year. He was sure they would all agree that he was entitled at their hands to a hearty vote of thanks.

Mr. SMITH seconded the resolution, and agreed that Mr. Barling had fulfilled the duties of his office admirably.

The motion was agreed to.

The PRESIDENT: I thank you for the compliment. I am sorry I have not been able to fill the chair more ably.

LINCOLNSHIRE VETERINARY MEDICAL ASSOCIATION.

THE eleventh annual meeting of this Association was held at the Angel and Royal Hotel, Grantham, on March 9th, 1893. The President, T. E. Smith, Esq., M.R.C.V.S., of Market Rasen, occupied the chair; and those present were the Mayor of Grantham, as a visitor, Messrs. W. B. Dickinson, Boston; F. L. Gooch, Stamford; J. H. Goodall, Melton Mowbray; C. Hartley, Lincoln; J. Mackinder, Peterborough; J. A. Robinson, Market Deeping; Captain B. H. Russell, Grantham, Treasurer; and J. Smith, Huntingdon, Hon. Sec.; and several pupils.

The New President.

Mr. HARTLEY proposed that Mr. James Smith, of Huntingdon, be the new President. He was, as they all knew, very energetic in promoting the interests of the Association as secretary, in which capacity he had acted for the last two years and had carried on the business through many difficulties with great distinction to himself. He had great pleasure in proposing him to that position to which he was further entitled by seniority.

Mr. SMITH said he was much obliged for them proposing his name as President. It was an honour which he should appreciate at some future date, but he should much prefer that some other member of the Association should be proposed as President for the ensuing year.

Captain RUSSELL rose to second the proposition of Mr. Hartley, and said he had known Mr. Smith a long time as a member of this Association, and he was senior to any other candicate for the office.

Mr. SMITH was then declared unanimously and duly elected, and the new President, in returning thanks, said that he was very much obliged, but he would much rather have seen his friend Mr. Goodall elected Presiden, as he was sure he would have made a much better President than he himself would.

On the proposition of Mr. DICKINSON, seconded by Mr. HARTLEY, and supported by Captain RUSSELL, Mr. Robinson, of Market Deeping, was chosen Secretary; Captain Russell was re-elected Treasurer; and Messrs. Goodall, T. Smith, and T. Rudkin, Vice-Presidents.

On the proposition of Mr. DICKINSON, seconded by Mr. HARTLEY, Mr. Weston, of Oakham, was elected a member.

The British Institute of Preventive Medicine.

The circular letter signed by the Chairman of the Council asking for a donation to the fund was read.

Mr. GOOCH said as to this matter he thought they would do well to follow the example set by the other associations which had had meetings. He was at a meeting of the Midland Association at Birmingham the other day, and it was there decided that if the veterinary profession were suitably represented on the Council they would support it heartily, and would propose that subscriptions be sent through the National Veterinary Medical Association or through the Royal College of Veterinary Surgeons. He should have pleasure in proposing that they follow the example of other societies and adjourn the matter to the next meeting to see whether the Institute would elect any more of the members of the veterinary profession on their council. The feeling at the Midland was that they should not recognise this Society until the National Association had decided what should be done.

Mr. RUDKIN did not see, if it was a purely medical association, why they should support it. He agreed that it should be deferred until the next meeting.

Mr. GOOCH said there was only one member of the veterinary profession on the Council, all the rest were medical members.

Captain RUSSELL said he should be glad to second Mr. Gooch's proposition that the matter remain in abeyance for the present. If this profession was recognised by the Institute he should be prepared to do something towards its funds. He had a strong feeling that if this Institute was carried out on broad and practical lines, it might possibly be of great help to the profession, but not so if they only wanted their money to swell their funds and leave the veterinary profession out in the cold. He should support it being left in abeyance.

Mr. DICKINSON read the following paper on

"OPIUM."

Gentlemen,—The reason of my selecting this commonly-used drug, opium, is from a knowledge of the fact that few veterinary pharmacies are considered complete without it, and its daily use causes me to think that its actions therapeutically and physiologically are apt to be lost sight of; hence I have endeavoured to commit to writing a few details to refresh the memories of those who are kind enough to listen to these remarks. My object is not to

attempt to exhaust the subject, simply to give the results noticed as we pass by. Opium belongs to the family of Somnifacients or sleep producers—its principle action therapeutic as far as concerns us practically, are:—Relief of pain or irritability, producing sleep, and checking secretion. The known physiological action of the drug enables us to employ it for the alleviation of the conditions met with in our patients. These then are the points for our particular consideration, because in our patients our object and duty is to play the part of palliating all discomfort and uneasiness with such agents as we have at our disposal. To gain this ultimatum we resort to medicinal agencies perhaps more than other means, because in painful injuries to the limbs we have not an opportunity of resorting to surgery. Amputation is the quickest method of removing the offending limb, and constant pain, which must in our patients be kept and borne amidst a lot of suffering which, alas, cannot be averted or controlled. The horse, on the other hand fortunately, is saved months of anxiety and suffering which too often is the lot of man, who falls a victim to malignant cancer, when he must then rely on opiates, etc., to help him to bear the sufferings which continue to the bitter end. What I particularly wish to demonstrate is the haphazard, careless way in which we often use opium, many of us do or have based the greatest reliance in its virtues and expectant results, and when these results are not obtained we are apt to blame the drug, before first asking ourselves if the administration of it was indicated, not by the symptoms presented, but by those we observe.

The colic draught must (according to the idea of some) contain tr. opii. These are sent out in quantities to the layman who uses them indiscriminately, until he remembers the notice on the bottle "after two or three draughts have been given and the patient is not relieved seek veterinary aid at once." What is the situation? We in all probability find the patient free from pain, in fact apparently better, and the owner tells us there is no necessity for us to look at it. Having journeyed some distance we prefer seeing the object of our visit. Yes, quite free from pain—comatose, perspiration here and there in patches, drooping ears, dilated nostrils, accelerated pulse. Is this colic, the result of colic, or is it due to some mechanical factor extrinsic or intrinsic to the animal? These symptoms are on a parallel with those of opium poisoning, and may be produced by experiment. I have seen these exhibited in the horse by four to six drachms of the aqueous solution. Why then need we surmise when many horses receive as many ounces under the circumstances before mentioned. The argument may be raised that numbers of horses are subjected to the same quantity and are not affected by it. I grant all this, but my endeavour is to prove that it is easier to produce alarming symptoms often than to ensure the curative action of opium. What may be looked on as manifestations of pain resulting from intestinal derangement may be narcotism exhibited after a dose or two of opium, and the symptoms may be overlooked and thought to be increased pain.

Referring to the number where no such symptoms are present, there are two answers, firstly, that in some the administration of opium was not indicated; secondly, the fact of the capability of animals to take quantities more than others without the least effect.

You may also meet with the other condition which applies to all medicines —idiosyncrasy—the susceptibility of some patients to the action of certain drugs. A minimum dose will cause unpleasant symptoms. From notes on the symptoms of opium treatment I quote two cases. Geldings, the same age, presenting the same symptoms, as far as one could diagnose, of flatulent colic, but not severe. One ounce of tr. opii was given to each animal and followed by half-ounce doses every hour and a-half. After three doses No. 1 showed that beneficial effect had soon made its mark, but in No. 2 the symptoms remained, and not any way changed. Three grains of morphia injected

with 1-12th atropine produced its hypnotic effect. This dose of hypodermic produces all this hypnosis, and in case No. 2 was independent entirely of the of the previous administrations of opium.

Physiological and therapeutic laws are important in the extreme: "The mere knowledge of doses and materia medica terms does not constitute a therapeutist." (*Lowell.*) We not only want to know the action of this, and the other, but the methods of action—in other words, "How it's done." From experiments made upon the horse in particular, there is a vast difference to those made in man, which places us in difficulty, and prevents us in a great measure arriving at an exact estimate of the specific action of any drug, especially opium. Man alone is capable of describing even the slightest phenomena which he experiences under the medicinal influence. The experimenter would fail to notice what the other experienced, and must be ignorant of action unless he were told what had been going on. What we learn is from observations and not description of detail. A friend of mine, a doctor, took Indian hemp to test its action. He described his feelings to me as experiencing the most beautiful dreams, but no desire to sleep in the recumbent position; he could walk, as it were, dream and lose consciousness to a certain degree. I have given it to the horse and seen the loss of motion, drowsiness etc., but could never find out if he were dreaming, proving what we miss by not getting the detail.

Cerebral and spinal are the two distinct phenomena of opium. In animals of a higher development of organisation, the cerebral is more noticeable. Temperament also plays a part. The nervous horse is practically without resolution with regard to enduring pain; the plethoric and sanguinous horse will bear up under the infliction of more punishment than those under the other types, as seen in firing and the performance of minor operations. These peculiarities will help us in our daily employment of opium, its salts, and every other preparation.

The knowledge of the fact that the mucous membrane of the mouth absorbs opium with great rapidity, shows how the secretions of the mouth are arrested —hence the fœtid odour and dryness, with the wall-licking desire exhibited in horses under colic and opium administration. This used to be looked on as a condition due to dyspepsia and acidity—one dose of tinct. opii will cause it. The nausea produced by this drug is sometimes not overcome for many days; the appetite is kept in abeyance; digestion may be very seriously affected. These few hints point to the use of morphine instead of the crude article, hypodermics where it is practicable. Some like using pilocarpin; it is very useful, but ought not to be continued; it is cumulative. Materia medica has not discovered any drug yet to rival opium as an anagelsic, except, of course, anæsthesia. Opium is resorted to for the alleviation of pain from any cause, except in inflammation of the brain and its meninges. Its valued action is clearly demonstrated in the treatment of spasm, when sensory and motor disturbance is set at rest.

Hœmoptysis is combated by opium, from its soothing effect upon the vascular system. Its depressing influences on these centres place the bleeding animal in repose and safety. The astringent effect is perhaps seen more to advantage in the treatment of diarrhœa than other affections; its action is pronounced, but the dose must be small and repeated. Short intervals between the doses are better than long ones, the object being to keep up the action of the dose, whereas if the interval be long, that action passed off. In large doses as astringents acting too quickly, there is fear of paralysing the splanchnics, and causing more purging; smaller doses stimulating inhibitory nervous apparatus. Minimum doses have a dual action on the alimentary canal by relieving intestinal pain, and the inconvenience of gastric catarrh, but in chronic dyspepsia it is not indicated.

As a sedative to the respiratory centre and afferent lung nerves, especially regarding cough, which is a reflex act, the soothing influence of opium merits its use largely in many distressing affections of the thoracic organs. Coughing is often a beneficial act, and should not be arrested as a general practice without first trying to remove the cause. In some instances, where distress is marked, and secretion abundant, it is prudent not to administer opium lest we arrest, what nature will and can to a great extent, eliminate by expectoration. Camphor combined with opium in cough is very useful.

In cases where the product of tissue change is causing trouble, such as lymphangitis, opium aggravates matters from its power of arresting the action of the kidneys. Diabetes insipidus in the dog, and in man also, is much relieved by opium, although it is not proved that it has been found in the urine, but it is fair to believe that it is in part eliminated in this manner. The amount of urine is certainly diminished. Retention in the horse and dog can at times be seen after giving a full dose.

Age greatly modifies the action; in the young it is borne very badly and the dangers of its use are increased. Sucking mares excrete it in the milk, thereby affecting the offspring. In the older animals more may be required to bring about the effect desired. With the exception of the astringent action required I prefer morphine for its easy administration and more rapid action. The quality can also be better relied upon, as it is of definite composition.

Since the days of Pliny and Paracelsus, opium has been used as a preventive in malarial fevers, and is now used in the fen districts of this county as the prophylactic against ague.

Discussion.

Mr. GOOCH said he was sure they were all very much obliged to Mr. Dickinson for his able paper brought forward for discussion (Hear.) They were likewise very much obliged for the manner in which he had explained, and by his experience certified to the actions of the drug opium. He was very pleased to hear Mr. Dickinson say that he would rather have the active principle of the drug itself than opium. By administering hypodermically drugs were quicker in their action and more easily given, and this desirability of obtaining the active principle applied not only to opium, but to other drugs He also agreed with Mr. Dickinson's opinion as to cases of opium poisoning by repeated doses of colic draughts. He had seen colic drinks given with grave results, and he believed in some cases death would be produced by the opium and not from the cause for which the draught was given.

Mr. MACKINDER said when he first saw the subject of opium he began to think what Mr. Dickinson could tell them new about it. It was once said that it they had only opium and physic, that was all a veterinary surgeon needed, and he quite agreed that they used opium indiscriminately. He had seen cases of opium poisoning and where large doses had been given to broken-winded horses. In those cases there was profuse sweating in the flank. They stood drooping and sweating in the flank, with their bottom lip drooping, and in a sleepy stupor, and in some cases died from opium poisoning. He would rather use morphia, and he objected to opium in itself. In the case of any inflammatory action of the mucous membrane he would not use the tincture of opium. He believed in the aqueous solution, as they did not get inflammatory action and were more likely to save the case. They were living in an age when many new drugs were coming up, such as chlorodyne and chloral hydrate, but no one could say, unless he had a good stock of opium that he had everything he wanted. He asked how much opium Mr. Dickinson had ever known given to any animal.

Mr. DICKINSON: I once knew 23 ounces given in 14 hours. I have known one ounce given in a ball.

Mr. MACKINDER said he had known three ounces to be obtained from the chemist's and given in a ball.

Mr. RUDKIN cited a case in which 1½ ounces of opium killed a horse.

Mr. JAS. SMITH said he should like to join in thanking Mr. Dickinson for so very kindly bringing forward this subject, which no doubt, although a very familiar one, was one which they were very liable to think more lightly of than it ought to be. For his own part he must confess that as to using opium, he seldom did, but the active principle was a very favourite drug of his, and when given hypodermically he had seen some excellent cures by this injection of morphia, more than he had seen in years gone by by the use of tincture of opium. He had not the slightest doubt in his mind that even at the present day many of the cases they saw and which they considered to be suffering from some affection of the bowels, many of the symptoms were caused by the administration of opium given to relieve pain.

Mr. MACKINDER, in answer to Mr. Hartley, said that in cases of opium poisoning the pulse was fluttering.

The PRESIDENT (Mr. T. E. Smith) said that he must endorse the complimentary remarks made as to Mr. Dickinson's paper, and he was of the same opinion as him as to the cumulative doses of this drug given in colic draughts Several years ago he used to give it, and had found the same result as described, and he had now quite discontinued the use of it in colic draughts. In a case that came under his notice, a man gave a horse six drachms of opium before going to a fair. He did not sell it, but brought it back. It would not touch its food, and about two hours after it died. He had known an ounce given by dealing men in severe cases of broken wind.

Mr. HARTLEY said some of the horses in the fens had a lot of opium given them.

Capt. RUSSELL said he had been very pleased to hear the paper that Mr. Dickinson had written. He had taken an infinite amount of trouble over a dry and difficult subject, because it was not everybody who had the ability or opportunity to watch his patients and notice the actual effects of the drugs upon them as Mr. Dickinson had done. In his own practice they used but little opium, and they seldom administered it except to beasts with stoppages, and they then gave six ounces for a dose. They gave it with this idea, that where they got an enormous amount of pain and with peristaltic action, if they gave a good big dose of tincture of opium things went on better for it. He had smoked opium, and he assured them it was a very pleasurable sensation. Just a little bit, about the size of a tare seed, in a pipe of tobacco was not half bad taking. Mr. Dickinson had been at great trouble to write an interesting paper on a drug they knew very little about, for he held that they used it without knowing much about it and what the effects would be. They knew what the results were, and what they desired to get, but did not know much about the drug. He thought there were many cases of constipation in the horse that they rendered worse by its use, and kept longer under treatment than should be.

On the motion of Mr. HARTLEY, seconded by Mr. RUDKIN, Mr. Dickinson was heartily thanked for his paper.

Mr. DICKINSON, in reply, said he was very much obliged for their expressions of gratitude for his paper, which was simply given with the idea of causing discussion as to the pathological and therapeutical properties of the drug. He never used opium in colic draughts, because he had seen poisoning by the use. Chloric ether or aromatics acted quite as well and cost very little as compared with opium, which, to say the least, was expensive. He advised them, if they mixed their own tincture of opium, not to throw the dregs away: they made beautiful cough balls with camphor. The science of adulteration had now so advanced that it had become difficult to get the crude drug pure

and honest; it was necessary, therefore, to get the properly tested alkaloid or active principle. With regard to the quantity of opium given to a horse, he was once told that a man had given an ounce of arsenic. Now he knew very well that he did not. A man went and bought three ounces of opium from a chemist, but he did not get three ounces of opium. There was no reason why such a dose should poison or should not poison. Then again, they had idiosyncrasy coming in. Some men could drink brandy and others could not, and the same thing applied to animals and these drugs. The quality of opium had a great deal to do with its action.

Mr. DICKINSON gave a few practical directions as to the purchase and storage of opium, and said that as a paralyser of the bowels, there was nothing in the pharmacopœia like it; and in abdominal surgery, where there was a fear of peritonitis succeeding the operation, there was nothing better than opium. In opium poisoning there was one simple little thing that would help them more than anything else in resuscitating the animal, and that a big enema pipe in the rectum; keep the sphincter open. It roused them from sleep and would keep them going with cold applied in other parts.

It was decided to hold the next meeting at Peterboro'.

Two interesting pathological specimens were shown by Captain Russell and Mr. Rudkin.

The Dinner.

An excellent dinner was served at the Angel and George Hotel, Mr. Thos. Smith presiding, and Mr. Dickinson being in the Vice-chair. The health of the President was proposed in felicitous terms by Mr. Dickinson; and Mr. Smith suitably replied. Captain Russell in complimentary phrases gave the health of the Mayor, who replied, expressing his pleasure at having been privileged to attend so interesting a gathering.

Mr. MACKINDER gave the health of the retiring secretary, commenting on the excellence of that gentleman's work during the last two years and the untiring interest he had taken in the welfare of the society. The secretary duly replied, and the health of the treasurer was heartily toasted on the proposition of Mr. Goodall, and met with a characteristic response from Captain Russell, and the company shortly afterwards separated, having had a very pleasant réunion.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

AT the Monthly Council Meeting, held on May 3rd, the following report relating to the contagious diseases of animals was read:—

Pleuro-Pneumonia.—In the first sixteen weeks of the present year there has been only one case of this disease in Great Britain. 46 contact and 21 suspected cattle were, during that time, slaughtered, but all of them were found free from the disease. In the corresponding period of last year there were 71 diseased, 734 contact, and 68 suspected cattle slaughtered by order of the Board of Agriculture.

Swine Fever.—This disease is again increasing. The published returns show 786 outbreaks and 3,927 swine attacked this year, as compared with 561 outbreaks and 3,512 attacked in the corresponding period of last year.

Anthrax.—Since the beginning of the present year anthrax has been much more prevalent than it has been in the corresponding period of any of the past three years. There have been this year 146 outbreaks and 335 animals attacked. In the corresponding periods of 1892, 1891, and 1890, there were 82, 68, and 49 outbreaks respectively.

Glanders (including Farcy).—The returns of these diseases show a slight decrease this year as compared with last year. There have been 451 outbreaks and 769 horses attacked this year, as compared with 473 outbreaks and 870 horses attacked in the corresponding period of 1892.

SOUTHERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE annual meeting of the above Association was held on April 30th, at the Royal College of Veterinary Surgeons, Red Lion Square, Mr. J. F. Simpson, President, in the chair. There were present Sir Henry Simpson, Vet.-Capt. Raymond, Messrs. J. D. Barford, E. Langford, F. W. Wragg, J. B. Martin, and the Hon. Sec., Professor Penberthy, S. Villar, and H. M. Singleton, Esq., attended as visitors.

Sir Henry Simpson moved, and Mr. J. D. Barford seconded, that the reply received from the secretary of the Board of Agriculture in answer to the resolution forwarded by the Association on the subject of glanders should be entered on the minutes.

Mr. F. Hobday, of Redhill, was nominated a member of the Association.

Election of Officers.

Mr. J. F. Simpson was re-elected President on the proposition of Mr. J. D. Barford. The vice-presidents elected were: Messrs. J. W. Barford, T. B. Goodall, C. Carter, and J. B. Martin. Mr. C. Pack was re-elected secretary and also treasurer to the Association.

After some discussion regarding the finances of the Association, it was resolved to send a circular to all those members in arrear with subscriptions, calling their attention to the same.

The British Institute of Preventive Medicine.

The SECRETARY then read a letter received from the British Institute of Preventive Medicine explaining the objects of the proposed Institute and asking for a donation; also a letter received from Dr. Fleming on the same subject.

The CHAIRMAN said that all Veterinary Associations had recognised the necessity of such an Institute, but it appeared to be the general opinion of members of the profession that they were not sufficiently represented on the Council of the Institute. There was a doubt also as to how contributions should be sent, whether the Associations should subscribe individually or send in their contributions in one amount.

The SECRETARY read a letter from the Secretary of the National Veterinary Association on the subject.

Mr. J. D. BARFORD said that the Association of which he was President had requested the Secretary to write for further information, as they considered that very little general information was given in their letter. The Association quite believed in the necessity of such an institution, and were of the opinion that our Associations would do well to support the institution.

Vet.-Capt. RAYMOND said that a letter had been received from Dr. Ruffer at the Central Association, saying that he had consulted Sir Joseph Lister with regard to electing more veterinary surgeons on the Council of the Institute, and he replied that when the building got so far that the work could be organised a fresh Council would be elected, and that no doubt more veterinary surgeons would then be put on the Council. He (Capt. Raymond) thought this reply was rather vague, and he considered that the Institute ought to conciliate veterinary surgeons by adding to their number on the Council at a very early date.

Sir HENRY SIMPSON said that the Royal College of Veterinary Surgeons

could either take a broad view or a narrow view of the matter. There was no doubt that it was a national question, and he would have been more pleased if the Royal College of Veterinary Surgeons had taken a wider and broader view of the matter than they had done. Their action was like the man, who being asked for a subscription to a church, said "certainly, I will give you a subscription if I am to build the church." It was a national question and it was not right to ask what was to be done in the way of appointing additional veterinary surgeons on the Council while the Royal College of Veterinary Surgeons had not contributed one sixpence to the funds.

Vet.-Captain RAYMOND: It is not a national question.

Sir HENRY SIMPSON said that it was called "The National Institution," and in his opinion it was a national question. It was not right to call it a private enterprise. The only reason why it was made a limited liability institution was because it could not be registered in any other way. A very large and influential meeting of members of the medical and veterinary professions was held, and a deputation waited on the Chairman of the Board of Trade, and the matter was fully thrashed out. It was a national concern, and very materially concerned the veterinary profession. He would have been very glad if the Royal College had given a donation, because the Institution would go on whether the College contributed or not, and many thousands of pounds had already been collected. During the period from 1880 to 1891, the Royal College had saved a sum of £5,000, and he would have been glad if the College had decided to give a donation of say £100 to start with, and to supplement that by saying that if, after a conference with the Directors or Council, the veterinary profession were satisfied that they would be adequately represented, they would be prepared to give a donation (perhaps extending over a number of years) of an additional £1,000. The Southern Counties Association had but little money to deal with, and therefore they could not give an individual donation, but that was his view with regard to the matter.

Veterinary-Capt. RAYMOND said he did not think the Institution was a national one. He had no doubt that the Institution would be a very good thing, but it was not a matter of national importance. In his opinion, the Royal College of Veterinary Surgeons were not—at any rate, as far as he was concerned—acting in a narrow sense, and they did not intend to do so. It was only right that the Royal College should protect the interests of the profession generally, and in a matter where diseases of animals were concerned, it was only right the profession should be properly represented, and they were quite right, therefore, in standing out for adequate representation.

Mr. MARTIN said he gathered from the discussion that they all considered the Institution was a very laudable object. They had been very much in the background as regards bacteriology, and he thought they were all willing to co-operate with the other associations, and, when they saw their way clear, to contribute their portion towards the Institution.

Mr. J. D. BARFORD then proposed the following resolution:—"While recognising the principles of the object of the British Institute of Preventive Medicine, this Association is desirous of obtaining further information as to the objects of the Institute before promising to support it."

Mr. MARTIN seconded the resolution, which was carried *nem. con.*

The CHAIRMAN proposed that the Association should support the candidature of Mr. Wragg for election on the Council of the Royal College of Veterinary Surgeons.

Mr. MARTIN seconded the proposition, which was agreed to.

Veterinary-Capt. RAYMOND proposed that the Association should also support the candidature of Mr. W. A. Edgar for election to the Council of the Royal College of Veterinary Surgeons.

Mr. J. D. BARFORD seconded the motion, which was agreed to.

The SECRETARY proposed that Southampton be fixed as the place of the meeting in June.

Mr. WRAGG seconded the motion, which was carried.

Professor PENBERTHY then proceeded to make some remarks on

"ANÆMIA AND DIARRHŒA IN CATTLE."

Gentlemen,—Some few days since your President asked me to read a paper or introduce some subject for discussion at this meeting. Had any matter been at my disposal, time would not have permitted, but I replied that should no one be found to engage the task, as the date was fast approaching, I would be glad to occupy a little of your time by exhibiting some specimens of nematodes found in the stomach and intestines of bovines in association with anæmia and diarrhœa, and to make a few remarks on the same. This explanation I think is due to you on account of the prominent position which my name occupies in the agenda paper. I venture, however, to hope that though the specimens may not be so complete, nor the remarks so prepared or elaborate as I could wish, that you will deem the matter worthy of your attention for a short time. We have heard something about the British Institute of Preventive Medicine and most of us recognise the importance of the studies which it is proposed to carry on therein, but I cannot help thinking that since the discovery of bacteria and the relegation to them of such an important role in the production of disease, what we may call a bacteria *furore* has been established, and there has been manifested some little indifference to the study of the grosser causes in the production of disease, sometimes a disposition "to strain at the gnat and swallow the camel." (Hear, hear.)

Any of us who have been associated with mixed country practice—and I claim to be associated with country life, having been born naturally to it, and to be associated with country practice on account of being in constant intercourse with a large number of men practising in different parts of England—cannot have failed to have met with a form or forms of anæmia, associated with diarrhœa in cattle, one of an acute, the other of a chronic character, and most of us have experienced very great difficulty in dealing with the conditions. Now, the most striking form in which this appears to us is that affecting young cattle, usually from nine months to two years old. This, since I have been making some special enquiries about the matter, I find is not limited to my part of the country, but affects herds in almost every county; and since I wrote a letter to *The Record* asking my friends to send me specimens, I have received a very large number, and I should like to take advantage of this occasion to, in the first place, offer my thanks to those gentlemen, and then to say that I shall be very glad to receive further remittances, if they will kindly send me portions of the abomasum and of each of the intestines of animals so affected.

The symptoms of the condition are a more or less rapid loss of flesh, which often precedes and always follows an acute diarrhœa, in which the discharge is of a particularly liquid character, and usually ejected with much force. The visible mucous membranes are pale and, if the blood be examined, it is found to be in a peculiar condition, often noticed in man and other animals suffering from pernicious anæmia; there are very large corpuscles, very varied and peculiar in shape. Appetite usually remains, animals get weaker and weaker, the diarrhœa becomes more urgent, listlessness more marked, and death ensues in a longer or shorter time. It is not at all uncommon for a third or a half of a small or large herd of young animals to succumb to this disease, which is very frequently attributed to vegetable, animal or mineral poisons, to sewage, or tuberculosis, and we know two or three instances in which it has been put down to starving.

Anent the last, let us take a case which is perhaps not thoroughly characteristic, but which shows how far the disease may go, and how striking it may be. This is a case of very recent occurrence. Last Wednesday week a gentleman in the profession sent me parts of the viscera of two young cattle which had died, asking me to examine them to see if I could find any tuberculosis. I could find no tuberculosis, and I reported so to him. On the following Friday afternoon he called and asked me to go with him and see these animals, because they were still in a very bad condition, some of them dying. He then detailed the symptoms, which were characteristic of this anæmia and diarrhœa. I had, fortunately, not destroyed the other specimens, so searched the mucous membrane (about an inch square) of the intestines, and there I found many nematode worms, specimens of which we have under the microscope. After a conversation as to the history of the cases, it was almost a foregone conclusion what was the matter with them, but at the suggestion of the veterinary surgeon I visited them.

The animals belonged to a wealthy man who farmed for pleasure, and who kept about 200 or 300 cattle. He had taken about 270 acres of good grass since last June, and had spent large sums in artificial food, a supply of which these cattle had been eating during the winter—in addition to the grass which they might pick up. There was every reason for supposing this was good food—turnips, straw and meal freshly pulped and mixed every day, and nothing injurious could be attributed to it. In the summer of 1892, 50 of the cattle in the park died. In November last 123 were put into another park, and out of this lot there were only 80 remaining, so that 43 had died in five months. This remnant had been brought to the home farm, and separated from the general herd were 17 that were said to be in a characteristic condition, and appeared to be placed apart to die. They were standing or lying about the field in a very emaciated condition, with ample evidence of profuse diarrhœa, and one or two were near death. We had one shot, and made a *post-mortem* examination, which was characteristic, that is to say, throughout there was evidence of want of blood and emaciation, the viscera yielding no signs of other disease before opening into the abomasum and intestines. Here there was evidence of inflammation and irritation, and on feeling over the surface of the membrane one found occasionally here and there little nodules. On scraping a little of the mucus from the abomasum and the cœcum, as much as would just go on the point of the knife, and examining it under the microscope with the quarter inch, numerous small parasites were visible. I have seen parts of as many as eight parasites under the quarter of an inch magnification, and I never failed to find them in large numbers on each slide though I examined more than 30. These parasites give evidence that they have the blood of the animal in them. If we examine them closely we shall find they are sticking head foremost under the epithelium of the mucous membrane. In my opinion they extract the blood from the vessels, at the same time naturally causing a considerable amount of irritation, and in some cases—depending on their numbers—the most intense inflammation. The structural changes are most marked in the abomasum and cœcum, and in those case we find the worms which are on the table for your observation.

We know it is very commonly said by observers that the dog, the cat, the horse and the pig nearly always have round worms in the intestines, and that is the normal condition. That donkeys and mules also have them, though not so frequently, and that the goat and the ox have them very much less so. If the animal is sufficiently strong and if the condition does not favour the growth of these nematodes in numbers, we can quite understand that we shall have no appreciable symptoms, but when the relations are reversed and we find the parasites in myriads and realise that they are blood-suckers, we must look for some pathological results. These results in my opinion are, as we

should expect from this constant blood-sucking and irritation, viz., a pernicious anæmia and diarrhœa.

In association with these smaller worms I have very frequently found the tricocephalus affinis and strongylus contortus sometimes in large numbers; also numerous ova and larvæ. I have met with ova and larvæ in various stages of development and, though I know nothing of their life history or development, this suggests the possibility that these worms require no intermediary bearer, but that the whole cycle of their life may be maintained inside the host. If this be the case we can understand that in some instances the disease may be a slowly or rapidly progressive one.

In those cases which have assumed an acute character and have proved more rapidly fatal, I have usually found three varieties of worms. The largest, a strongylus, though not usually detected in the mucus by the naked eye, when carefully separated from the mucus and placed under a cover glass on a slide may be seen as a fine short scratch. Placed under quarter-inch objective the two sexes are easily differentiated. The length of the male and female does not vary as much as is common with strongyles: it may be roughly stated to be from 3-25ths to 6-25ths of an inch. The female is pointed at each extremity, usually containing ova relatively large, the vulva situated near the posterior extremity. The male is provided with a bilobed bursa supported by eleven rays, four on each side, and three centrally placed, more distinct, and the middle bifid at free extremity. Above the bursæ is a retracted double spicule, dark and prominent.

Another parasite, which I have found only in those cases proving very fatal, is shorter, about 2-25ths of an inch, perfectly straight, pointed at each end and much narrower than the foregoing. I have only met with females. This I am disposed to regard as *angillula intestinalis*, which is accredited with inducing pernicious anæmia in various species of animals.

The third worm is longer than the latter and shorter than the former, pointed at both extremities, which are usually curved inwards; the anterior part of the body has transverse markings.

I do not claim that either of the parasites mentioned is new to science, though neither in our own or foreign literature do I find a description tallying to that of the first, nor attributing the disease I have described to the presence of parasites. My views as to the parasitic nature of these two forms of diarrhœa and anæmia in cattle have been supported by the results following administration of vermicides.

In the chronic form it has usually been regarded as due to tuberculosis, and the subjects recognised under the terms "Wasters," "Skeinters," "Skanters," "Hitters," "Piners," etc., and it is probable that in some cases tuberculosis may induce similar conditions. My experience tends to the view that it is very rarely a cause. I have made many *post-mortem* examinations, and though in some cases there was evidence of tubercle, I have found those lesions no more frequently than I should expect to in making examination of carcases and viscera of cattle dying of pleuro-pneumonia. In the majority of cases, the finding of tubercle is probably but fortuitous. It was really the absence of tubercle in these reputed cases that led me to search the alimentary mucous membrane. In 1889 I found the parasite first described, and detected remains of worms in caseous or calcareous nodules in the walls of the intestines.

The treatment I have usually advised is the administration of assafœtida to young and much emaciated animals, to be followed with salt, iron, and gentian, and good food. To the stronger, turpentine, carbolic acid, creosote, etc., followed up as in case of the weaker. I think it advisable to administer the tonics and salt to all young cattle which have been placed under the same conditions. Our losses from gastric and intestinal parasitism are by no

means limited to bovines. In sheep, we meet with a condition of anæmia and diarrhœa due to strongylus contortus, and other worms, which usually proves very fatal. The sclerostoma tetracanthus is responsible in the horse; and in hares and rabbits, I have found blood-sucking strongyles producing the greatest destruction.

I feel, Mr. President, that I may have too far trespassed on your time with my crude remarks, but I am inclined to think that this is an important condition, and I venture to hope your time has not been altogether wasted in hearing these statements from me on what I regard as the cause of so serious a condition—a condition which is known by many to bring about very large losses, and sometimes ruin to stock-owners. It appears to matter little what extra food is given to animals suffering from this disease; they seem, sooner or later, to succumb, unless the fact of the helminthiasis is recognised and treated on the principle of worms in the alimentary canal. I have a lot of specimens here. You will be able to manipulate them as much as you like. You will see the nature of the parasites, and when you have looked at the strongyle, you will observe that it is smaller than any of the others, not reaching half the length or breadth of the strongylus contortus of the sheep, with which it cannot be confounded. I shall be extremely glad to hear your experience of this condition, and, if I can, to answer any questions concerning it.

Professor PENBERTHY then exhibited naked eye and microscopic specimens of the worms from cattle, of the *sclerostoma tetracanthus* of the horse, *strongylus contortus* of the sheep, the *triocephalus affinis* of the ox, *strongylus strigosus* from stomach and intestine of rabbit, and a strongyle from the stomach of the hare.

On the motion of Mr. J. D. BARFORD, seconded by Mr. WRAGG, it was decided that the discussion should be adjourned until the next meeting.

SOUTH DURHAM AND NORTH YORKSHIRE VETERINARY MEDICAL ASSOCIATION.

A MEETING of this Association was held in the Imperial Hotel, Darlington, on March 3rd, Mr. F. R. Stevens, President, in the chair. There were also present Messrs. J. E. Peele and A. A. Stevens, Durham; P. Snaith, J. G. Deans, H. H. Roberts, and J. R. Crone, Bishop Auckland; W. T. Briggs, G. J. Harvey, C. G. Hill, and W. N. Dobbing, Darlington; Jno. Nettelton, Northallerton; A. Peele, West Hartlepool; Professor Penberthy, London, and the Secretary, W. Awde, Stockton-on-Tees. Apologies for non-attendance were read from Professors Walley and Williams, and Messrs. Greaves, Neish, and Nash.

Mr. PEELE, Senr., reported an outbreak of disease amongst pregnant ewes, a *post-mortem* examination of which revealed pneumonia due to the strongylus rufescens.

Mr. BRIGGS produced a dried specimen of skin from a cow's udder, showing only two teats developed; also the foot from a pit pony which had come under his notice.

The communication from the British Institute of Preventive Medicine was then considered, and as nothing definite was known as to how it would be managed, a committee was appointed to make inquiries, and it was resolved that a donation of five guineas should be given by the Association provided that such inquiries were satisfactory, and it was also left to them to decide whether the donation should be sent direct to the Institute, through the Royal College of Veterinary Surgeons, or through the National Veterinary Association.

The adjourned discussion on Mr. Briggs's paper was then concluded, and a hearty vote of thanks accorded him.

The following were elected members of the Association:—Mr. A. Stevens, M.R.C.V.S., Durham; Mr. J. R. Crone, M.R.C.V.S., Bishop Auckland; and Mr. Fred Jonar, M.R.C.V.S., Darlington.

Mr. STEVENS (President) then proposed, and Mr. Nettleton seconded, that the members of the Association have an annual picnic, each member to bring his wife or a lady friend, and a committee was appointed to arrange matters and to report to the next meeting.

Professor PENBERTHY then read the following paper on

"MEAT INSPECTION."

Complying with the request of your President to introduce a subject for discussion, I am acting in accordance with his suggestion in bringing forward that of "Meat Inspection." It would be manifestly absurd to attempt to deal in detail with the whole subject in the time at our disposal, and I propose to touch only on those points affording most ground for debate, or which demand our most emphatic expression. Under this head I mean to include the inspection of the supply of milk and animal flesh intended for human consumption, and my first premise is that at present this is incomplete and unsatisfactory. Common observation and experimental pathology have laid bare many facts concerning the effect of food from animal sources, on human health. The communicability of several diseases of animals to man has been established, and we regret to say that much of the work done is so far abortive on account of the absence of systematic application of the knowledge acquired. The Government of our country has been remarkable for having directly lent no aid to pathological investigation, and the British public for its apathy in the advance of pathological science. To the energies of private individuals and institutions it has been left to carry on work in this direction. In other countries we find public funds devoted to the regulation of matters so important to the public good, and it appears to us little less than a national disgrace that so little is done in this great flesh-eating country to protect the consumer of animal food against dangers and frauds which are imminent and palpable. It is beyond the region of doubt that milk and flesh detrimental to human health are constantly sold and consumed, and that systematic inspection would be a barrier to such traffic and consumption.

There is evidence of a half-hearted recognition of the fact and a piece-meal legislation. Thus we have the "Dairies, Cowsheds and Milkshops Order," and the "Public Health Act," and some large corporations, as those of Edinburgh and Newcastle, have acquired certain special powers by Act of Parliament. I venture to express the opinion that if provisions beneficial to large and powerful corporations are provided for them by special Act of Parliament, that such provisions should affect the whole country, and that the time has arrived when the food supply of the whole population should be regulated by comprehensive and compulsory measures. The "Milkshops and Dairies Order" contains regulations as to cleanliness, &c.; but if milk may be contaminated with specific communicable disease before it reaches them, any system which does not control the supply at its source must be incomplete, and to a large extent ineffectual. Milk may become contaminated after it is drawn from the cow, and we know of no more facile means of distributing disease-germs than through the milk supply; but in order that inspection may be effectual and security near completeness, we must proceed another step, and every cow, as well as every cowshed, should be under the inspection and supervision of a competent authority. This authority can be no other than the veterinary surgeon, and on his fiat should rest the settlement of the ques-

tion as to the purity of the source. At the present time we know of no Act or Order which confers such power on members of our profession. However, in an Order of the Local Government Board, of March 28th, 1889, defining the duties of the Medical Officer of Health, is the following:—"He shall himself inspect any animal, carcase, meat, flesh, or milk, and if he finds such animal or article is diseased, or unsound, or unwholesome, or unfit for the food of man, he shall give such directions as may be necessary for causing the same to be seized." We know that in some instances the wisdom of the local authority and medical officer leads them to consult the veterinary surgeon, but his services are only engaged on sufferance, as it were, and this position is far from satisfactory. To entrust the inspection of milk and flesh to the layman is nothing short of a scandal, and totally unworthy of our consideration. It is undoubtedly the special province of the medical officer to conserve the health of men, and to relegate the whole duty of meat inspection to the veterinary surgeon would be almost as absurd as to place the doctor in control of the diet of the domesticated animals. This by no means relieves the veterinary surgeon from a share in the inspection of the food of man, or from the necessity of specially preparing himself for the duty. His professional education and his life-work afford him opportunities for acquiring that special knowledge which is not otherwise obtainable. The studies of comparative anatomy and pathology are important items in our educational curriculum, and the Royal College of Veterinary Surgeons in extending its course has indicated a desire to ensure competency in this direction by specialising "Meat Inspection" as a subject of examination. There can be no question that the condition of live cattle and of animal tissues on *post-mortem* examination is the special province of the properly educated veterinary surgeon.

It cannot, however, be expected that the final settlement as to fitness for human consumption will be left solely to him. Our view is that the matter should be determined by the joint opinion of the medical officer and veterinary inspector. The knowledge gained by local veterinary surgeons acting as inspectors would bring corollary advantages. With it must come a more intimate acquaintance with communicable disease existing in his district, and if his finding were reported to a central authority, it must prove a great power in the suppression of disease and proper disposal of carcases, offal, &c.

Evidence is not wanting that the medical profession is alive to the necessity for fitting themselves for their duties under this head. Beside marked advances towards the study of comparative pathology, there has been established a special examination on public health for the Department of Public Health, and no person, after January, 1892, may be appointed a medical officer of health unless he hold a diploma in sanitary science, public health, or State medicine. While we claim a special position in this matter, it behoves us most carefully to prepare ourselves for it, as the responsibilities it entails are serious. The cleanliness of dairies or milk shops may not fall within the practice of a veterinary surgeon, but the sanitary inspector or inspector of nuisances should act under his direction or guidance in matters of cowsheds, slaughter-houses, disposal of carcases, disinfection, &c. The means by which these conditions may be enforced, whether compensation should be paid to owners, and such things, are matters in which the veterinary surgeon has no interest beyond that of a ratepayer or citizen. I fear we have been apt to occupy ourselves a little too much with such questions, and sometimes, possibly, losing sight of the necessity of fitting ourselves for our proper professional work, and of impressing on the public mind the importance of the subject.

Entering on a consideration of the work of an inspector of meat, we may not lose sight of the fact that our function in that capacity is the preservation of human health and the protection of the consumer from fraud; and as a

sequence only, the lessening of disease amongst animals supplying our food. The purchaser of milk and flesh has a perfect right to demand a sound article for his money, and I venture to think that this should have a great influence in our decisions in cases where doubt may exist. Into the argument as to fitness are often imported such remarks as "The bacilli are destroyed by so much boiling," or "Cooking to a certain degree of temperature," or "Rendered innocuous by so many hours' action of the gastric juice," &c. If it be illegal for the grocer to sell the harmless margarine as butter, it surely should be illegal for a milk-seller or a butcher to expose for sale milk, cream, butter, or flesh with contaminations that are distasteful, and possibly highly injurious. Guided by this principle, the inspector is likely to err only on the right side, and if the system is found to press hardly on the farmer or middleman, means of rectification will be forthcoming, and greater circumspection, perhaps sometimes honesty, will be exercised.

Regarding the regulation of the milk supply, there are some orders supposed to be in force now—the Dairies, Cow-sheds, and Milk-shops Order, 1885. I would go further than this, and have every milch cow and cow-shed subject to the periodic examination of the veterinary inspector, who should certify to the fitness of each animal to supply milk for human consumption, whether for sale or private use. As a guide to the inspector, I think it should be taken that in case of evidence of disease being communicable to man, or where there was general disturbance sufficient to induce elevation of temperature, or local changes in the udder, or to deteriorate the blood, that such milk should not be offered for sale or made into cream or butter. This would include such specific diseases as anthrax, black quarter, cattle plague, foot-and-mouth disease, variola, parturient fever, simple, septic, and tubercular mammitis. At the present moment there are few parts of our subject more discussed than that of the sale of milk from tuberculous cows. In the milk from tuberculous udders, as well as from animals affected with general tuberculosis, tubercle bacilli are sometimes demonstrable; but it is not always possible to demonstrate their presence in milk which proves to be infective.

Therefore we have no means of determining, except that of experimentation on small animals. Though it may not be possible to speak definitely as to which case of tuberculosis will or will not yield tubercle bacilli or spores in the milk, we should have no hesitation in preventing the sale of milk from tuberculous cows. This practical condemnation of the tuberculous cow, especially if associated with isolation, must have a permanent beneficial action in limiting the existence of bovine tuberculosis.

Our knowledge of the communicability of some of the specific diseases of animals to man, and the deleterious effects on animal tissues, rendering them dangerous to health and of inferior nutritive value, force on us the conviction that a system of thorough inspection of flesh intended for human consumption is necessary. No system can be perfect which does not bring under examination every carcase, and we hold that it should be illegal to offer for sale any carcase which had not been declared fit by the properly qualified officer of the authority in whose district the animal was slaughtered. In every town and district where practicable, there should be public abattoirs. Private slaughter-houses should be registered as at present, and under such control that the above conditions of inspection of every carcase could be fulfilled. This system has the great advantage of allowing opportunities for examining the viscera, which we regard as very important. The principal objects of inspection are the detection of communicable disease, or other conditions deleterious to human health, whether the flesh is of the animal purported, and to some extent if it be of fair nutritive value. These are better ascertained if the viscera be examined than otherwise, and the proper disposal of diseased carcases, etc., must prove a means of preventing disease

amongst animals. It is not illegal to sell horse-flesh for human consumption, but it must be labelled as such; and though there are certain differences, such as coarseness of muscle fibre, nature of fat, odour, &c., which may give us an approximate idea as to the animal of which the flesh is part, all difficulties would be removed by an examination of the viscera. Again and more important is the fact that we may gain evidence from the viscera of general disease, which is not forthcoming from the carcase.

At the outset it is essential that the inspector of meat should have a proper appreciation of the state of healthy tissues, and the laws which govern it, as well as experience in detection of deviations therefrom. A sound veterinary education, in conjunction with the cultivation of ordinary powers of observation, should supply the necessary knowledge.

Next comes the important consideration of the conditions which render flesh unfit for human censumption. Of some there can be no reasonable doubt, of others some doubt may exist; and we think that while in the one case we have no hesitation in condemning and destroying, that until the element of doubt can be removed, the intending purchaser should have the benefit, and that some means (as labelling) should be adopted to let him know of the element of risk. Meat from an animal suffering from a disease whose causal factor will induce the same disease in man, will be in the majority of cases condemned. Under this head will be included anthrax, glanders, rabies, trichinosis, measles of pork, beef, etc. Opinions, however, differ as to the treatment of the flesh of animals suffering from localised tuberculosis, actinomycosis, &c. We think that until some more definite knowledge as to the danger likely to arise from the eating of such meat has been gained, it should be sold as coming from a doubtful source.

Then we have a class of diseases due to microbes which do not induce their specific effects in man, but undoubtedly deteriorate the tissues of their host, and leave ptomaines there. By common consent such carcases are condemned. In this category come swine-plague, cattle plague, pyæmia, black quarter, variola ovina, etc.

Further, there are some diseased conditions whose pathology is still obscure, and from the eating of the flesh of which no ill consequences have been made known, *e.g.*, parturient apoplexy. This we would relegate to the class to be distinctively marked. There are also to be considered certain changes which may occur after death, and here experience must, to a large extent, guide us —for example, the differences of putrefaction in game and in common flesh.

Professor Penberthy then entered further into details on some of the conditions named, and concluded his remarks by urging the necessity for giving publicity to our opinions on these matters, and suggesting that some definite resolutions should be passed as to the desirability of systematic inspection of cows and cow-sheds, slaughter-houses, carcases, viscera, etc., and for more united action of the Local Government Board and the Board of Agriculture.

After the discussion which followed, the following resolutions were unanimously passed:—

"That in the opinion of this meeting, there are no efficient means in operation to prevent the sale of milk and flesh from diseased animals. That it is necessary that all milch cows and cow-sheds should be submitted to periodic inspection, and the sale and use of milk from diseased cows should be prohibited. That all carcases and viscera should be examined at the slaughter-houses. That all flesh liable to induce disease in man should be condemned. That all other carcases that are not from perfectly healthy animals should be marked with a label stating the disorder from which the animal suffered. That public abattoirs should be established in every practical situation. That veterinary surgeons, by education and experience, are the proper persons to perform the duties of inspectors."

A hearty vote of thanks was then accorded to Professor Penberthy for his kindness in coming so far, and for the interesting paper which he had given.

A special meeting of the Association was held on Tuesday, April 4, to take into consideration the present election of members of Council. As it was considered that the North of England was not so well represented as it might be, and the present seemed a favourable time for the Association to run a Candidate, it was decided to nominate the Secretary, and to use every effort in order to secure his election.

W. AWDE, *Hon. Sec.*

Jurisprudence.

IS A "GOOD HUNTER" A "SOUND" HORSE?

AT the Southampton County Court on April 18th, the case of Vere Birch Reynardson *v.* J. A. Tilley was heard. Mr. Lamport appeared for the plaintiff, and Mr. White for the defendant. Plaintiff, of Testbourne House, Totton, sought to recover from the defendant, a riding master, of Alton, the sum of £39 18s., purchase money of a gelding sold by Messrs. Perkins and Sons, Southampton, to defendant at the Repository, and in the alternative claimed the amount of defendant's cheque paid to Messrs. Perkins, and endorsed by them to plaintiff, payment of which was stopped.

Mr. LAMPORT, in addressing the Court, said the facts of the case were exceedingly simple. The plaintiff was the son of a well-known county gentleman, was a member of the New Forest Hunt, and had for one season hunted the animal in question. The reason of plaintiff's wishing to dispose of the animal was that he was about to get married, and he instructed Messrs. Perkins and Sons, auctioneers, Southampton, in the ordinary way, to sell this animal. Plaintiff also took the precaution before the sale to have the animal inspected by Mr. Burden, a veterinary surgeon, and at the sale and in the advertisement regarding the sale, the animal was described as a nice gelding, six years old, "a good hunter, will carry a lady, goes in double or single harness." On the day of the sale the defendant had the opportunity and did inspect this animal, and it was sold to defendant in the ordinary course, and knocked down to him for £39 18s., and he took it away in the ordinary way. He (Mr. Lamport) had to call his Honour's attention to the conditions of the sale, and his Honour would notice that in connection with the description of the animal there was no warrant as to soundness. The conditions of sale were exhibited in the yard on a board (the actual copy exhibited was here produced), and included the provision that where a horse was entered as a good horse, quiet to ride and drive, and so on, the money should be paid to the owner on the following Tuesday unless the purchaser delivered to Messrs. Perkins, on or before 10 o'clock on the following Monday, a certificate from a veterinary surgeon as to unsoundness, or a statement in what other respect the description of an animal was not answered.

Mr. WHITE explained that his main contention was as to the description of the animal as "a good hunter." They said it was not.

Mr. LAMPORT said that the conditions of the sale had not been complied with. Apart from the question of warranty, he held that the defendant had not complied with the conditions of the sale. Having given the cheque as a negotiable security which was endorsed by the auctioneers in favour of the vendor, the proper course for the defendant to have taken if he thought there was any breach of warranty, was to have given the usual notice, had the horse re-sold, and sued the vendor for any damages sustained, and he should have

done that within the time mentioned in the conditions of sale. Coming to the more important point, he (Mr. Lamport) contended there had been no breach of warranty, and he thought he should be able to prove satisfactorily to his Honour that there had been no misrepresentation in regard to the animal in question.

FREDERICK STYLES RING (Messrs. Perkins and Sons) testified as to the sale of the animal.

Cross-examined by Mr. White, witness admitted the receipt, on the Monday afternoon after the sale at four o'clock, of a communication from defendant, enclosing a veterinary's certificate, but the animal reached them at 12 o'clock the same day.

Plaintiff said he bought the animal in 1892 and hunted it, and in the summer it was turned out. His groom hunted it in January.

Cross-examined by Mr. White, witness admitted that he only hunted the animal once last season, but he had seen the animal hunted.

ROBERT SMITH, groom to the plaintiff, said he had hunted the animal in question several times. The animal hunted very well.

Cross-examined by Mr. White, witness said that he used to ride the animal daily. He had hunted it three times this season.

Mr. STANLEY PEARCE, Master of the New Forest Hounds, said he had seen the horse in question hunting at their meet. It was a good hunter, and, in his opinion, would do a good day's hunting. His definition of a good hunter in this part was sound in wind and eye, and capable of being hunted.

Cross-examined by Mr. White, witness said that on an average there would be from 30 to 40 horses at their meets.

Mr. TIMSON, a member of the New Forest Hunt, said he had seen the animal in question, and it went as well as others. There was no reason why a horse with a side bone should not hunt, unless it was lame. The animal was not lame when last he saw it, in December or January.

Mr. WILLIAM THOMAS WALLACE, proprietor of the Bedford Mews, said he had had experience of 25 years in hunting and other horses. The horse, as far as he saw on the day of sale, presented no appearance otherwise than that it might be considered a good hunter. His definition of a good hunter was sound in wind and eyes, and capable of being hunted within the time specified for trial.

Cross-examined by Mr. White, who asked him if he would buy a horse with ossification of the cartilage as a good hunter, witness said it was a matter of degree. He had known horses theoretically unsound and practically sound.

Mr. BARFORD, veterinary surgeon, deposed to examining the animal in question on the 7th inst. He saw nothing to prevent the animal being a good hunter. He found slight side-bone. The animal was not lame when he saw him.

Mr. JAMES GEORGE BURDEN, veterinary surgeon, Southampton, deposed to examining the animal on the 26th January, and the animal was, in his opinion, sound. He saw no side-bone. It could not be possible for the animal to have hunted as had been related, if it had been lame in both fore legs and had much side-bone.

Cross-examined by Mr. White, witness said he found a splint on one of the fore legs. No reason was given to him for an examination of the animal.

Mr. WHITE then addressed the Court for the defence, and drew particular attention to a letter sent by the plaintiff in reply to a communication from the defendant. Plaintiff wrote that he was sorry the bay gelding did not come up to his expectations, but he begged to point out he gave no warranty of soundness, but the animal was described as "a good hunter," a term which was generally considered to mean being sound in wind and eye. The

plaintiff seemed to think he was disposing of all liability by simply entering the animal as a "good hunter," but had the animal styled "a good hunter" in order to enhance the price of it.

Defendant said that he bought the animal for the purposes of hunting and a good hunter, but he found it lame.

Cross-examined by Mr. Lamport, defendant said he did not hunt the animal. He had no opportunity. It had a well-developed side-bone, and was unsafe to jump.

Mr. WALKER, veterinary surgeon, Alton, deposed to being called on to examine the animal, and he found it had a well-developed side-bone in the off fore foot, and a splint in the near one, and the animal could not be described as a good hunter under those conditions.

Mr. REDFORD, veterinary surgeon, who examined the animal on the 27th March, found it lame in both fore legs. The animal had a fully developed side joint and a splint, and consequently could not be described as a good hunter.

HIS HONOUR gave a verdict for the defendant; remarking that he had no hesitation in saying that the animal was unsound.

Mr. LAMPORT asked his Honour for a ruling as to whether defendant was not bound by the conditions.

HIS HONOUR said that defendant must have a reasonable time in which to comply with them. The horse was returned by the first train on Monday morning.

Mr. LAMPORT said that there might be an appeal.

THE VETERINARY SURGEONS ACT.

AT the West Ham Police Court, on May 15th, J. H. Venables, a blacksmith, was summoned at the instance of the Royal College of Veterinary Surgeons, for having, at Wood Grange-road, Forest-gate, used a description from which it would be inferred that he was specially qualified to practise a branch of veterinary surgery, contrary to section 17 of the Veterinary Surgeons Act, 1881. The same defendant and his father Joshua Venables, a blacksmith (trading as Venables and Son), were summoned for a similar offence at Dames-road, Forest-gate. Mr. George Thatcher conducted the prosecution, and said that the defendants had rendered themselves liable to a penalty of £20, but he should not press for that amount. He called Henry Francis Wedlake, a solicitor's clerk, who in respect to the first case said he visited the younger defendant's premises in Wood Grange-road, on the 30th March. It was a general shoeing forge, and outside the shop was a board on which was painted—"J. H. Venables, veterinary shoeing forge and general smith. Veterinary medicines kept in stock." Mr. Thatcher produced the register, which showed that the defendant's name was not upon it. The defendant said he was not aware that he was doing wrong. He was only selling bottles of medicines on behalf of a Mr. Gray, who was a veterinary surgeon. Respecting the other charge, which was heard before any decision was given, Mr. Wedlake said he went to Dames-road, Forest-gate, on the same day, and outside the defendant's shop saw a board which had painted on it, "J. Venables and Son, veterinary shoeing forge. Mr. H. Gray, M.R.C.V.S., attends daily. Cattle medicines kept in stock." Mr. Thatcher pointed out that neither defendant was on the register. The elder defendant said he allowed the board to be put on his shop by Mr. Gray, and had never asked him one penny for it. Mr. Thatcher said, in mitigation, that the younger defendant had removed the board and promised not to offend again. A fine of £2 and 7s. 6d. costs was imposed in the first case; and in the second case the defendants were fined £2 and costs. The money was paid.

Notes and News.

THE UNITED STATES EXHIBITION.—The German Government has deputed Professor Dieckerhoff, rector of the Berlin Veterinary High School, to represent Prussia as Commissioner for Veterinary Affairs at the forthcoming Chicago Exhibition.

HORSE-SHOEING AT THE FRENCH VETERINARY SCHOOLS.—The French Minister of Agriculture has issued a decree to the effect that veterinary students are no longer to be compelled to undertake the "exercises of the forge," which means that they are not to be taught, manually, the art of horse-shoeing.

JEYES' SANITARY COMPOUNDS.—At the South African and International Exhibition, recently held at Kimberley, Jeyes' Sanitary Compounds Company were awarded the gold medal for their preparations. They have also received a certificate as to the efficacy of their "Perfect Purifier" Fluid from the authorities of the Sanitary Exhibition recently held at Portsmouth.

THE CATTLE PLAGUE IN RUSSIA.—An Odessa correspondent telegraphs:—The cattle plague is making heavy ravages in several of the southern governments. During last week two hundred infected animals were destroyed in Ekaterino-slav. The veterinary authorities believe that it is now almost impossible to prevent the epidemic spreading over the whole of the southern province. The disease was first imported from the Don country, where, it is estimated, ten thousand head of cattle have this year perished from the pest.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from H. G. Rogers, London; H. Gray, London; Jeyes' Sanitary Compounds Company, London; E. Wallis Hoare, Cork; A. W. Hill, London; J. Smith, Huntingdon; C. Pack, Lymington; Professor Duncan, Toronto, Canada; Veterinary-Captain Nunn, A.V.D., Lahore, India; J. W. Barker, Lincoln, Nebraska, U.S.A.

BOOKS AND PAMPHLETS: Report of the Madras Society for the Prevention of Cruelty to Animals; Transactions of the Bombay Veterinary Association; *W. S. Adams*, A Treatise on the Diseases and Accidents to which the Horse is Liable. Second Edition; Bulletin of the Johns Hopkins Hospital; Annuaire de la Société Nationale d'Agriculture de France; Bulletin de la Société Royale Proctectrice des Animaux de Belge; *Dr. F. Boschetti*, Il siero di Sangue nella Diagnosi della Morva; *R. T. Glazebrook*, Laws and Properties of Matter; Johns Hopkins Hospital Reports; Bulletin of the Agricultural Experiment Station of Nebraska; Annual Announcement of the Ontario Veterinary College; Procès-Verbal de l'Académie Royale de Médecine de Belgique; Bulletin et Mémoires de la Société Centrale de Méd. Vétérinaire.

JOURNALS, ETC.: *Recueil de Med. Vétérinaire; Repertorium der Tierheilkunde; Annales de Méd. Vétérinaire; American Veterinary Review; Clinica Veterinaria; Journal de Méd. Vétérinaire et de Zootechnie; Bell's Weekly Messenger; Mark Lane Express; Modern Medicine and Bacteriologieal World; La Presse Vétérinaire; Revue Vétérinaire; Lancet; Baily's Magazine; British Medical Journal; Live Stock Journal; Cape of Good Hope Agricultural Journal; Moderno Zooiatro; Journal of the United Service Institution; Edinburgh Medical Journal; Der Thierarzt; Maryland Farmer; Echo Vétérinaire.*

NEWSPAPERS: *Southampton Observer and Hampshire News; Morning Advertiser; Times of India; The Hindu; Ceylon Sporting Gazette; Madras Times; South-Eastern Gazette.*